Planning Commission
October 21, 2025 - 6:00 PM
233 South Main Street, Monroe, Ohio

Call to Order

Roll Call

Approval of Minutes

- Minutes for the July 15, 2025 Planning Commission Meeting

Old Business

New Business

- Case No. 2025-10-6— Public Hearing—Consideration of a Zoning Map Amendment for Glass Coatings & Concepts LLC
- Case No. 2025-10-7— Consideration of A Preliminary Plat for Tall Oaks

Administrative Reports

Adjournment

Planning Commission
July 15, 2025
233 South Main Street, Monroe, Ohio

Call to Order

Mr. Duckworth, Chair, called the meeting to order at 6:01p.m.

Roll Call

Planning Commission members present: Andrew Hall, Robert Duckworth, Christina McElfresh, Matt Frye, Debbie Hagedorn

Staff members present: Tom Smith, Development Director; Kameryn Jones, Assistant Development Director; Jameson Cole, Planner; Michelle Layman, Planning and Zoning Specialist.

Amend April 15th Meeting Minutes

Mrs. Hagedorn moved to amend the approved minutes from the April 15, 2025 Planning Commission meeting, correcting the members absent and the adjournment section; seconded by Mr. Frye. Voice vote. Motion carried.

Approval of Minutes

Mr. Frye moved to approve the minutes from the May 20, 2025 Planning Commission meeting; seconded by Mr. Hall. Voice vote. Motion carried.

Old Business

None

New Business

Mr. Duckworth opened the public hearing for Case No. 2025-7-4- Consideration of a zoning map amendment for the property at North Main Street and Todhunter Road.

Mr. Duckworth stated the request will be presented by Staff. Following this presentation, anyone wishing to speak in favor of the proposal will be given an opportunity to speak. After all proponents have spoken, the opponents will be given an opportunity to present their case. Speakers are asked not to repeat the same ideas which have been previously presented but indicate that they agree with a previous speaker. All persons speaking are subject to cross examination and must be sworn. Planning Commission has the

opportunity to question any speaker after they have completed their presentation. Once the public hearing is closed, individual speakers have no right to comment during discussion by the Planning Commission.

Mr. Duckworth asked that all those wishing to speak during this public hearing (including staff) to stand and raise their right hand to be sworn in.

Having been sworn in Mrs. Jones presented the background as follows:

- The Drees Company has submitted a request to rezone properties located along North Main Street and Todhunter Road.
- The applicant seeks to rezone the property from RR Rural Residential to GR General Residential for the purpose of developing a residential subdivision.
- The site is approximately 61.7 acres and contains three parcels.

Mrs. Jones presented staff comments as follows:

The application before Planning Commission at this time is solely to change the zoning designation of the three parcels from RR Rural Residential to GR General Residential. The applicant has submitted a conceptual development plan. Approval of the layout and other site elements would come before Planning Commission at a future meeting date.

Planning Commission considers the following review criteria from 1207.23 Zoning Map Amendment. Staff has provided feedback where applicable

- Common Review Criteria. All applicable common review criteria as denoted in Table 1207.07-1, Common Review Criteria;

  The request meets all applicable common review criteria. One of the common review criteria asks if the request is consistent with the comprehensive plan. The current Advance Monroe 2040 Plan designates this area as “Mixed Residential”, which is intended for a range of housing types from single-family detached to townhomes. The requested zoning classification, GR General Residential, was established based on the Mixed Residential description.

- Changing Conditions. The proposed amendment corrects an error or meets the challenge of some changing condition, trend, or fact since the time that the original map designations were established;

  Conditions have not necessarily changed since the adoption of the current zoning map in spring 2024.

- Impact Mitigation. The proposal helps to mitigate adverse impacts of the use and development of land on the natural or built environments, including, but not limited to, mobility, air quality, water quality, noise levels, stormwater management, and vegetation, or will be neutral with respect to these issues;

  As with any development, there will be impact on the natural environment. Any future development on this property will need to be designed to mitigate these concerns. For example, the development will need to account for existing streams along the western border and incorporate noise buffering elements along North Main and Todhunter.

- Community Need. Whether the proposed amendment addresses a demonstrated community need;

  This development does partly address a community need in housing stock diversification. While Drees does intend to develop single-unit detached homes towards the south side of the project, the northern part will be attached housing. Attached housing has been identified as an important development type for Monroe to achieve given Monroe is nearly 90% single-family detached. Providing options for residents to both retain and attract a variety of community members is critical.

- Strategic Objectives. The proposal advances the strategic objectives of the City Council, such as fiscal responsibility, efficient use of infrastructure and public services, and other articulated City objectives; and

  The proposal makes use of existing connections by extending Edgewood Drive to the west, providing additional connectivity to the Brittony Woods subdivision. It also addresses Council's strategic objective of Strategic Growth and Development by adding additional housing to the center of town, which in turn will hopefully bolster commercial development in the area. Finally, development along a primary corridor will come with the addition of a shared use path, which will build upon city-wide connectivity goals.

- No Single Factor and Case Determination. No single factor listed above may control and not all factors may be applicable in each case. Each case shall be determined on its own facts.

Mrs. Jones presented public comments as follows:

- Letters have been included in Planning Commission's packet from the following in response to the public hearing:
  - 1. Lauren Stoecker, 628 Edgewood

Mrs. Jones presented department comments as follows:

- Fire Department:
  - Fire reserves the right to comment during future submittals.
- Police Department:
  - No comment at this time. Police reserves the right to comment during future submittals.
- Engineering/Public Works Department:
  - The Traffic Impact Study (TIS) is near complete and generally supports the access points on Todhunter Road and North Main Street. The complete and detailed recommendations will determine any required improvements within the proposed subdivision or along the main access roads.
  - Public Works and Engineering will comment during future reviews.

Mrs. Jones reviewed the process and next steps.

Mrs. Jones presented staff's recommendation as follows:

- In Zoning Map Amendment applications, Planning Commission acts as a recommending body to City Council
- Planning Commission may table the application, recommend approval, recommend approval with conditions, or recommend denial of the application.
- Staff recommends Planning Commission make a recommendation for approval to City Council regarding this application.

Matt Mains with Drees presented. Mr. Mains reviewed the presentation goals as follows:

1. Provide background on the property
2. Review request/justification
3. Discuss products being proposed
4. Highlight some proposed community features
5. Take questions and comments

Mr. Mains reviewed the background of the property. He stated the site is approximately 61.73 acres located at the corner of Todhunter Road and N. Main Street. Mr. Mains stated Drees is under contract on the property. Mr. Mains stated the existing conditions are mostly wooded, which they plan to keep as a buffer.

Mr. Mains reviewed the justification for the zoning change. He stated the current zoning doesn't follow the Comprehensive Plan for Monroe. Mr. Mains stated they recognize the need for this type of housing. He stated there will be three types of homes. Mr. Mains stated the location of the proposed subdivision is key as it will be near our downtown area. Mr. Mains stated the proposed plans would have 2.5 homes per acre. Mr. Mains

showed examples of the homes proposed for this development. Mr. Mains reviewed the community features of the proposed development.

Mr. Hall asked if there was an actual number for what the narrowest section of the buffer would be. Mr. Mains stated 70 feet roughly.

Mr. Duckworth asked for proponents. There were none.

Mr. Duckworth asked for opponents to speak.

Resident Carolyn Smith asked about the impact this development would have on the schools. She also mentioned the green space and hopes it can be saved. Ms. Smith asked how this would impact the property to the north of Todhunter. Ms. Smith is also concerned about water runoff management. Ms. Smith asked if the City would guarantee the buffer would not be affected by the development.

Resident Steven Jones mentioned the schools being impacted. Mr. Jones mentioned sewage issues. Mr. Jones is concerned about his property being impacted. Mr. Jones is concerned with water prices being raised.

Resident Bret James is concerned about whether the wooded area near his home will be preserved. Mr. James also mentioned concern for wildlife and drainage issues.

Resident Dave also mentioned the schools being impacted by the development. Dave also asked if this would connect to the subdivision on Edgewood Dr. Planning Commission members stated it would.

Resident Paul Richardson mentioned issues with water pressure, flooding in the creek, and the entrance off of Todhunter Road. He is concerned about if this will be safe.

Resident Jason Phelps mentioned the proposed area was supposed to remain green space.

Mrs. Jones stated she had taken notes for questions later on in the meeting.

Mrs. Hagedorn motioned to accept the documents for the record; seconded by Mr. Frye. Voice vote. Motion carried.

Mr. Hall moved to close the public hearing; seconded by Mrs. McElfresh. Voice vote. Motion carried.

Mrs. Hagedorn stated the zoning for this property is currently zoned for housing.

Mr. Duckworth asked how this would impact the housing statistics. Mrs. Jones states the City is currently 88% single family residential. Mrs. Jones stated they conducted a housing study a few years ago and stated the study found Monroe doesn't have other housing options other than single family detached. She mentioned the Comprehensive Plan and how the city wants to grow. Mrs. Jones stated the property in question was zoned agricultural and when the zoning map changed this became rural residential. Mrs. Jones stated this development compliments the Comprehensive Plan.

Mr. Duckworth asked Mrs. Jones about the code for buffering. Mrs. Jones stated she isn't sure of it now but that the applicant exceeds the requirements.

Mr. Frye asked if an HOA would be responsible for the buffer space. Mrs. Jones stated that her impression is that it would be left undisturbed. Mr. Frye asked who would be responsible for this area if there was an issue. Mrs. Jones stated the HOA would be responsible.

Mrs. Hagedorn asked about the flooding issue residents expressed. Mrs. Jones stated that it will be worked through during preliminary plat.

Mrs. McElfresh stated when the Comprehensive Plan was created, one of the visions was to have a more diverse housing stock available. Mrs. McElfresh also mentioned the connectivity that is proposed. Mrs. McElfresh stated this area was always zoned for residential housing. Mrs. McElfresh stated many of the concerns expressed will be part of the site plan process. Mrs. McElfresh reassured the residents questions and issues were heard.

Mr. Hall asked what types of living space general residential encompasses. Mrs. Jones stated it allows single family detached, duplex, townhomes, but not apartments. Mr. Hall asked if there is any area not being developed in the plan from Drees. Mrs. Jones stated the green space shown wouldn't be developed and that all 61 acres are being developed with this plan.

Mrs. McElfresh mentioned the issues with water runoff. Mrs. Jones stated the ponds are functional. Mr. Mains reviewed how the ponds operate.

Mrs. Hagedorn asked how many homes are proposed for this development. Mrs. Jones stated 91 single family and 60 attached.

Mrs. Hagedorn brought up the fact that young adults who want to live in Monroe have limited options. Mrs. McElfresh stated having different housing options is a good thing.

Mr. Hall doesn't think the proposed development diversifies the housing options in the City enough.

Mr. Frye mentioned a concern about the buffer for the current homes in the area. Mr. Frye also mentioned this development could potentially help with the flooding issues residents mentioned.

Mr. Frye moved to recommend for approval Case No. 2025-7-4- Consideration of a zoning map amendment or property at North Main Street and Todhunter Road with no conditions. Seconded by Mrs. McElfresh. Roll call vote. 5 ayes. Motion carried.

Mr. Duckworth opened the public hearing for Case No. 2025-7-5-Consideration of various text amendments to the Planning and Zoning Code.

Mr. Duckworth stated the request will be presented by Staff. Following this presentation, anyone wishing to speak in favor of the proposal will be given an opportunity to speak. After all proponents have spoken, the opponents will be given an opportunity to present their case. Speakers are asked not to repeat the same ideas which have been previously presented but indicate that they agree with a previous speaker. All persons speaking are subject to cross examination and must be sworn. Planning Commission has the opportunity to question any speaker after they have completed their presentation. Once the public hearing is closed, individual speakers have no right to comment during discussion by the Planning Commission.

Mr. Duckworth asked that all those wishing to speak during this public hearing (including staff) to stand and raise their right hand to be sworn in.

Mrs. Jones stated:

- City staff has prepared a set of code text amendments in support of the Downtown Master Plan (2024) and general updates for the year.
- The primary changes are found in the newly created 1202.06 section of the code covering the Downtown District Regulation Plan.
- The remainder of the changes are either minor modifications to existing regulations, adding clarifying language, or in response to ordinances passed within the year.
- 1202.06 Downtown (DT) District Regulating Plan
    - Creates subdistricts
    - Adds street cross sections
    - Tailors allowable signage
    - Modifies parking requirements

Mrs. Jones reviewed the downtown character districts' overview.

Mrs. Jones presented the allowed sign table. She reviewed the current code and the proposed code changes.

Mrs. Jones presented the change for building setbacks for commercial development.

Mrs. Jones presented the staff comments as follows:

- Planning Commission considers the following review criteria from 1207.22 Zoning Text Amendment. Staff has provided feedback where applicable.

  1207.22 Text Amendment

- Common Review Criteria. All applicable common review criteria as denoted in Table 1207.07-1, Common Review Criteria;

The application meets all applicable common review criteria.

- Changing Condition. The amendment is necessary to address a changing condition that was not anticipated in the Comprehensive Plan or this PZC; and

  The bulk of the text amendments proposed revolve around the Downtown Master Plan, which is a new initiative since the adoption of the most recent PZC.

- Impact Mitigation. The proposal helps to mitigate adverse impacts of the use and development of land on the natural or built environments, including, but not limited to, mobility, air quality, water quality, noise levels, stormwater management, and vegetation, or will be neutral with respect to these issues;

  The proposed text amendments are diverse, some of which address adverse impacts of development while other remain neutral.

- Community Need. Whether the proposed amendment addresses a demonstrated community need;

- Strategic Objectives. The proposal advances the strategic objectives of the City Council, such as fiscal responsibility, efficient use of infrastructure and public services, and other articulated City objectives.

  This set of amendments primarily addresses Council's Strategic Growth and Development objective, by proactively setting in place the regulations necessary to bring the Downtown Master Plan's vision to life.

  Outside of the downtown portion of the code, the text amendments are primarily small adjustments or corrections noted in the course of its day-to-day application.

- No Single Factor and Case Determination. No single factor listed above may control and not all factors may be applicable in each case. Each case shall be determined on its own facts.

Mrs. Jones stated there were no department comments.

Mrs. Jones reviewed staff's recommendation as follows:

- In Zoning Map Amendment applications, Planning Commission acts as a recommending body to City Council.
- Planning Commission may table the application, recommend approval, recommend approval with conditions, or recommend denial of the application.

- Staff recommends Planning Commission make a recommendation for approval to City Council regarding these text amendments.

Questions were asked regarding Urban Residential housing. Mrs. Jones addressed them.

Mr. Frye moved to accept the documents for the record; seconded by Mrs. Hagedorn. Voice vote. Motion carried.

Mrs. McElfresh moved to close the public hearing; seconded by Mr. Hall. Voice vote. Motion carried.

Mr. Hall moved to recommend approval of Case No. 2025-7-5- Consideration of various text amendments to the Planning and Zoning Code with no conditions; seconded by Mr. Frye. Roll call vote. 5 ayes. Motion carried.

Adjournment

Mr. Hall moved to adjourn the meeting; seconded by Mrs. Hagedorn. Voice vote. Motion carried.

The Planning Commission meeting adjourned at 7:39 p.m.

Respectfully submitted,

Michelle Layman
Planning and Zoning Specialist

[AgendaContent]

CITY OF MONROE
Inter-Office Correspondence

TO: Members of the Monroe Planning Commission
FROM: Kameryn Jones
Assistant Development Director

DATE: October 21, 2025
RE: Information Packet for October 21, 2025, Planning Commission Meeting at 6:00 p.m.

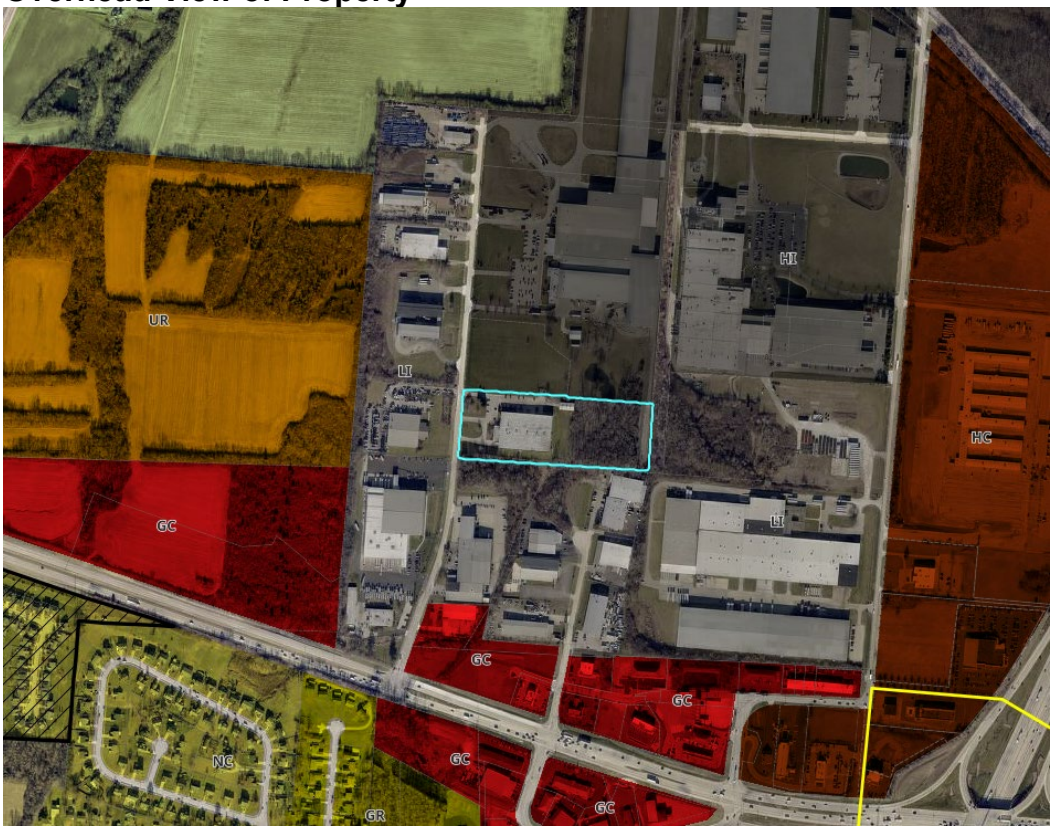
I. Case No. 2025-10-6— Public Hearing—Consideration of a Zoning Map Amendment for Glass Coatings & Concepts LLC

A. Background

- Glass Coatings & Concepts LLC has submitted a request to rezone property located at 300 Lawton Avenue.
- The applicant seeks to rezone the property from L-I Light Industrial to H-I Heavy Industrial for the purpose of combining recently acquired land from Worthington Industries.
- The site is approximately 8.64 acres.



Overhead View of Property



Zoning Map



Northeast from Lawton Avenue



East from Lawton Avenue



Southeast from Lawton Avenue

B. Staff Comments

The application before Planning Commission is to change the zoning designation from L-I Light Industrial to H-I Heavy Industrial.

Planning Commission considers the following review criteria from *1207.23 Zoning Map Amendment.* Staff has provided feedback where applicable.

1207.23 Zoning Amendment

- *Common Review Criteria. All applicable common review criteria as denoted in Table 1207.07-1, Common Review Criteria;*

  The request meets all applicable common review criteria. One of the common review criteria asks if the request is compatible with the surrounding properties and uses. The property is surrounded on all sides by Light Industrial and Heavy Industrial zoning designations. Existing businesses in this park include Performance Food Group and Worthington Steel.

- *Changing Conditions. The proposed amendment corrects an error or meets the challenge of some changing condition, trend, or fact since the time that the original map designations were established;*

  Conditions have not necessarily changed since the adoption of the current zoning map in spring 2024.

- *Impact Mitigation. The proposal helps to mitigate adverse impacts of the use and development of land on the natural or built environments, including, but not limited to, mobility, air quality, water quality, noise levels, stormwater management, and vegetation, or will be neutral with respect to these issues;*

  As with any development, there will be an impact on the natural environment. Glass Coatings & Concepts purchased the property to the north of this site, which is currently zoned Heavy Industrial, for future expansion plans. When the expansion happens, water quality, stormwater management, site mobility, and other relevant environmental and operational factors, will be enhanced and brought up to City standards for the entire development.

- *Community Need. Whether the proposed amendment addresses a demonstrated community need;*

  This zoning amendment will facilitate job growth with the proposed future expansion of Glass Coatings & Concepts.

- *Strategic Objectives. The proposal advances the strategic objectives of the City Council, such as fiscal responsibility, efficient use of infrastructure and public services, and other articulated City objectives; and*

  The proposed development aligns with the City Council's strategic objectives. Designating the area for Heavy Industrial use allows for an existing business to expand. This proposal directly supports the City's goals of fostering job creation, expanding the local tax base, and attracting long-term private investment.

- *No Single Factor and Case Determination. No single factor listed above may control and not all factors may be applicable in each case. Each case shall be determined on its own facts.*

C. Public Comments:

- No public comment has been received as of 10/15/25.

D. Department Comments

- **Fire Department:**
  1. Fire reserves the right to comment during future submittals.
- **Police Department:**
  1. No comment at this time. Police reserve the right to comment during future submittals.
- **Engineering/Public Works Department:**
  1. No comment at this time Public Works and Engineering will comment during future submittals.

E. Staff Recommendation

- In Zoning Map Amendment applications, Planning Commission acts as a recommending body to City Council.
- Planning Commission may table the application, recommend approval, recommend approval with conditions, or recommend denial of the application.

- Staff recommends Planning Commission make a recommendation for approval to City Council regarding this application.

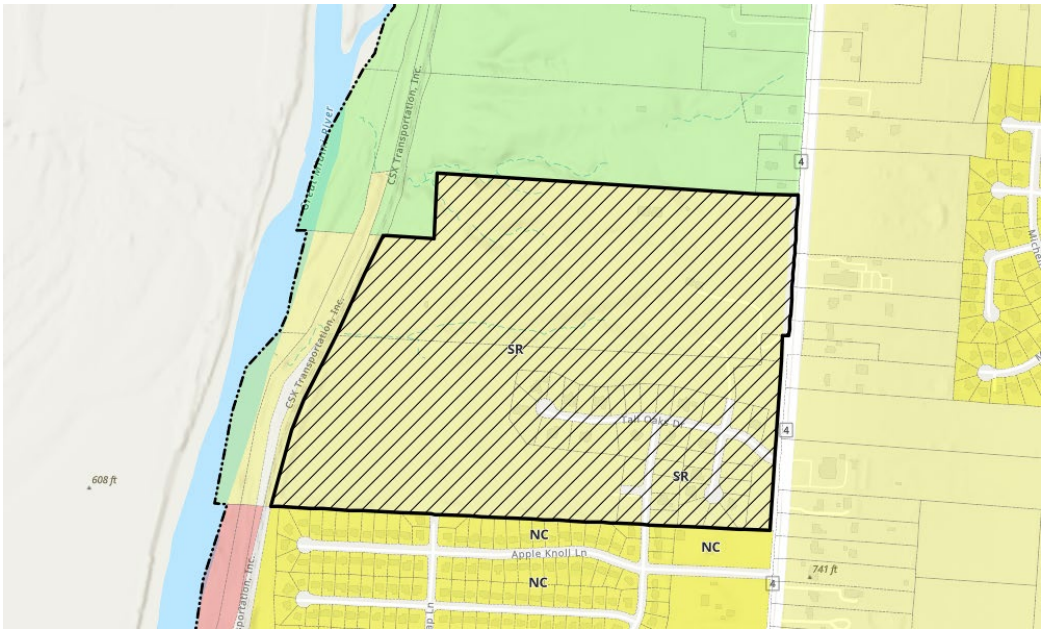
II. Case No. 2025-10-7— Consideration of A Preliminary Plat for Tall Oaks

A. Background

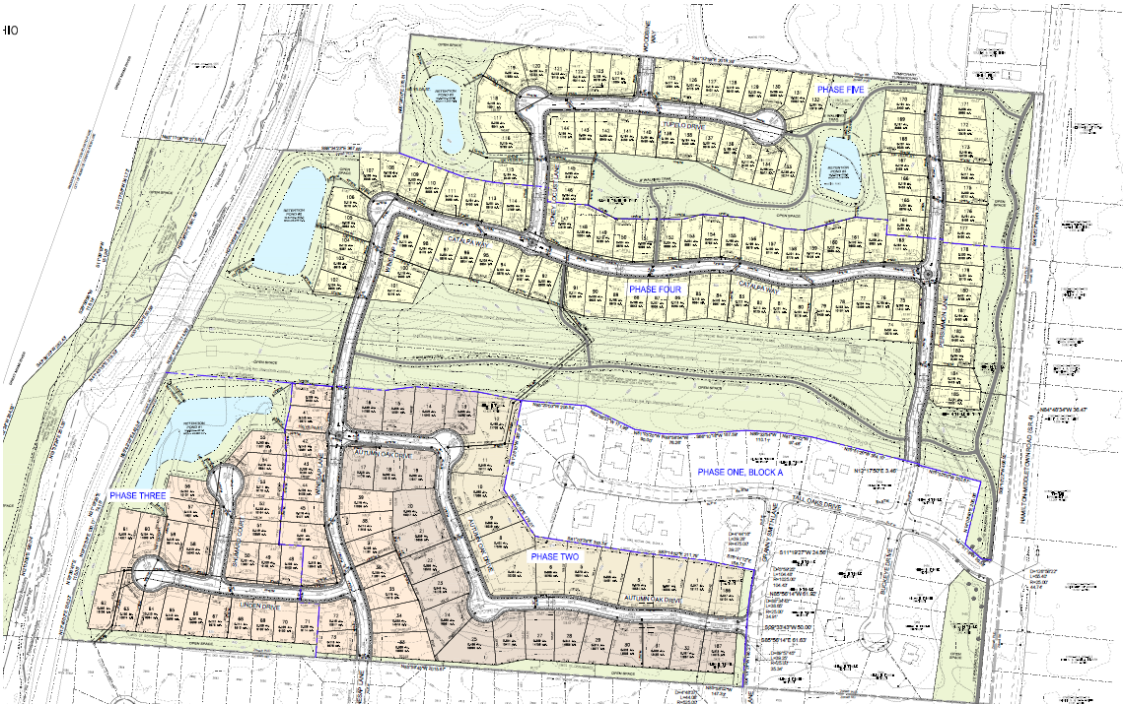
- CKN Development LLC has submitted an application for Preliminary Plat for Tall Oaks subdivision.
- The subdivision will be made up of 34 existing lots and 187 new lots for a total of 221 lots.
- The lot widths vary between 90', 70', and 65' as shown on the plat.
- The overall density will be 1.98 units per acre.



Overhead View of Property



Zoning Map



Proposed Preliminary Plat

B. Staff Comments

- This application is the next step in the development process for the Tall Oaks subdivision, which received PUD approval earlier this year through City Council. The written PUD Agreement and associated Master Development Plan (MDP) largely dictate the layout and parameters of the Preliminary Plat before Planning Commission as part of this application.
- The Preliminary Plat application provides the general design prior to moving into the construction drawing and actual construction phases of a subdivision project.
- Planning Commission considers the following review criteria from *1207.31 Preliminary Plat*. Staff has provided feedback where applicable.

1207.31 Preliminary Plat

- *Common Review Criteria. All applicable common review criteria as denoted in Table 1207.07-1, Common Review Criteria;*

  The application complies with applicable common review criteria. Of note, the request complies with the applicable standards of the PZC or has already complied with the appropriate procedures to request waivers through the PUD process. This application conforms to the Planned Unit Development approved earlier this year.

- *Subdivision Standards. The Preliminary Plat conforms with the standards in Chapter 1205, Subdivision Standards;*

  There are several Subdivision Design Waivers requested as part of this development that have been approved through the PUD process. These include exceeding the maximum

block length of 800 FT and exceeding the maximum number of lots served by a cul-de-sac.

- *Traffic Impact Study. If required, the traffic impacts from the proposed development will be adequately mitigated in accordance with 1204.18, Traffic Impact Study.*

  The applicant has a TIS in progress with the City Engineer. Required improvements as an outcome of this study will be implemented through the construction drawing process.

C. Department Comments

- **Fire Department:** Fire reserves the right to comment during the construction drawing review process.
- **Police Department:** No comment.
- **Engineering/Public Works Department:** Engineering review is ongoing. Applicant will need to comply with outcome of this review.

D. Staff Recommendation

- In Preliminary Plat applications, Planning Commission acts as a recommending body to City Council.
- Planning Commission may table the application, recommend approval, recommend approval with conditions, or recommend denial of the application.

- Staff recommends Planning Commission make a recommendation for approval to City Council regarding this application with the following conditions:

  1. All department comments shall be addressed in a revised set of plans prior City Council approval.

Application for a Zoning Map/Text Amendment

Monroe Development Department
233 South Main Street, Monroe, Ohio 45050
Phone: 513-539-7374
Email: planning@monroeohio.gov
www.monroeohio.gov

For Staff Use Only	
Submittal Date:	
Date Application Determined Complete:	
Date of Planning Commission Review:	
Fee Paid:	Staff Initials:
Application/Case Number:	

Zoning Amendment Review Information

1. The zoning map and text amendment review procedure and review criteria are established in Section 1207.04 of the Monroe Planning and Zoning Code.
2. A pre-application conference is required prior to submission of an application for a zoning map amendment unless the Development Director waives the requirement. Contact the Development Department to set up a time.
3. The application fee is due at the time the application is submitted to planning@monroeohio.gov.

Basic Information

Project Address: 300 Lawton Avenue

County: ☑ Butler ☐ Warren | Total Area of Rezoning: 8.64 acres

County Tax Parcel ID: C1800006000024

Existing Zoning District: LI Light Industrial

Proposed Zoning District: HI Heavy Industrial

Applicant Information

Applicant Name: Glass Coatings & Concepts LLC

Contact Person: Jonathan Wocher, AICP - planner for GCC

Contact Address: McBride Dale Clarion 5721 Dragon Way, Ste. 300, Cincinnati, OH 45227

Contact Phone Number: 513-561-6232 | Contact Fax Number: 513-561-1615

Contact E-Mail: jwocher@mcbridedale.com

Property Owner Name: Glass Coatings & Concepts LLC

The applicant may provide a separate attachment with contact information for additional people, if necessary (e.g., additional owners, registered engineer, landscape architect, etc.). The same contact information shall be provided for each contact name.

Zoning Amendment Information

1) Describe any change in conditions, trends, or other facts that necessitates the proposed zoning amendment. Furthermore, describe how the proposed zoning district will remedy the change in conditions, trends, or other issues.

Glass Coatings & Concepts (GCC) plans to build an expansion of the existing building and operations at 300 Lawton Avenue zoned LI District and recently purchased approx. 4.5 acres to the north of the existing site zoned HI District. GCC is requesting a zone change so that both properties have the same zoning designation. We believe that the HI District is the appropriate designation since it allows "manufacturing, production, or processing of glass", which reflects the current and future operations by GCC.

Project Address or Tax Parcel ID: 300 Lawton Avenue - C1800006000024

Rezoning Information Continued

2) Describe how the proposed amendment furthers each of the objectives of the Comprehensive Plan.

The 2040 Comprehensive Plan identifies 300 Lawton Avenue as an existing Heavy Industrial land use. The Plan describes Heavy Industrial land uses as locations for manufacturing, and that they are incredibly important to the employment and economic base of the City, and that these areas should be located along road corridors with the capacity to handle the necessary volumes of trucks traffic and in a manner to maximize infrastructure investments.
We believe that zoning the property HI District is consistent with the Comprehensive Plan and will encourage positive economic growth.

3) Provide information necessary to document and describe how the map amendment meets the review criteria established for zoning amendments *[Table 1207.07-1 Common Review Criteria and Article 07.04 Text and Zoning Map Amendments]*.

We believe that the proposed request complies with the recommendations of the Common Review Criteria and the Comprehensive Plan to encourage business expansion. The proposed zone change will designate all of the property owned by GCC in one zoning district, HI District, instead of split zoning. GCC plans to expand business operations in the near future and having consistent zoning will facilitate the future expansion without the confusion of split zoning on the property. No negative impacts are anticipated from the proposed change.

Certification and Signatures

Applicant Signature - I certify that, to the best of my knowledge, the information contained in this form and within any attachments is correct and truthful. I understand that knowingly falsifying this information may be grounds for the denial or revoking of this zoning map amendment application and any subsequent zoning permit or other review applications.

Print Name: Jonathan Wocher, AICP

Signature:

Date: 9-12-2025

Property Owner Signature - If the property owner is not the named applicant on this form, the property owner shall sign the form below acknowledging that the applicant is an authorized agent of the property owner as it relates to proposed project. If the proposed rezoning affects multiple properties owned by different property owners, each property owner subject to the rezoning shall be required to sign this form acknowledging consents of the rezoning request. Separate signature sheets or letters acknowledging such consent are acceptable.

Print Name: George E. Sakoske, President and General Manager Glass Coatings and Concepts

Signature:

Date: September 11, 2025

Note: A letter signed by the property owner, authorizing the applicant to act on their behalf may be submitted in lieu of the property owner's signature on this form.

Submittal Requirement Checklist	
General Information	
☑	Completion of required pre-application conference
☑	Zoning Map Amendment Review application form
☑	Application fee
☑	Legal description of the parcels subject to the proposed rezoning.
☑	Plans and maps established below at a scale no smaller than 1 inch = 100 feet, unless otherwise noted.
☐	Traffic Impact Study, if required by the City Engineer.
☐	Any additional information determined to be necessary by the Development Department
Vicinity Map (Scale may be smaller than 1" = 100')	
☑	Date, north arrow, scale, and a legend for all symbols
☑	Boundary line of the land subject to the proposed rezoning
☑	All surrounding properties, streets, and corporation limits within a minimum of 500' of the outer boundaries of the project site
Proposed Zoning Text or Map	
☑	The existing and proposed zoning for all properties part of the application for a zoning map amendment. The map shall also identify the existing zoning for all surrounding properties. For text amendments, a redline draft of the proposed text is required.
☑	Existing parcel lines for the properties to be rezoned and all parcel lines within 200' of the site
☑	Existing streets within 200' of site with names and centerlines
☐	Existing watercourses and bodies of water including any applicable flood hazard areas

September 12, 2025

Jameson Cole
City Planner
City of Monroe Development Department
233 S Main Street
Monroe, OH 45050-0330

Via Email – planning@monroeohio.gov

RE: 300 Lawton Avenue – Request for Zoning Map Amendment

Dear Mr. Cole,

On behalf of Glass Coatings & Concepts, LLC, property owner, I am submitting this letter and attached materials to request a Zoning Map Amendment for the 8.6-acre property located at 300 Lawton Avenue in the City of Monroe (Parcel Number: C1800006000024). The property is currently zoned LI Light Industrial District. We request to change the zoning to the HI Heavy Industrial District.

Glass Coatings & Concepts (GCC) plans to build an expansion of the existing building and operations at 300 Lawton Avenue which is zoned LI District, and recently purchased approximately 4.5 acres zoned HI District to the north of the existing site. GCC is requesting a zone change so that both properties have the same zoning designation. We believe that the HI District is the appropriate designation since it allows "manufacturing, production, or processing of glass", which reflects the current and future operations by GCC. We believe that the proposed zone change is consistent with the Monroe Comprehensive Plan and will encourage and facilitate positive economic growth.

To initiate this request, I am submitting PDFs of the following materials by email:

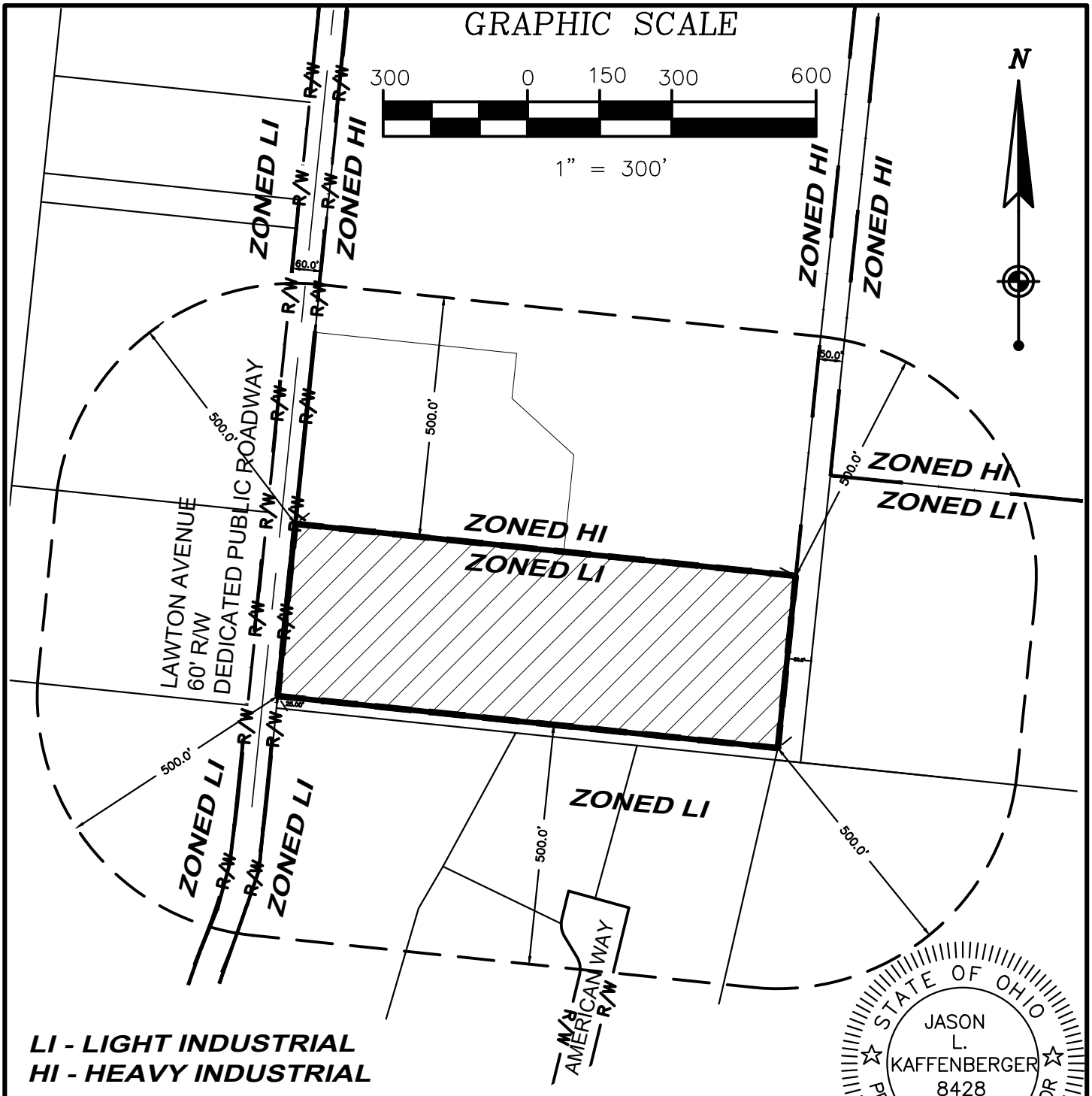
- A completed Zoning Map Amendment Application;
- A Vicinity Map;
- A Proposed Zoning Map; and
- A Legal Description.

I will coordinate payment of the application fee. Please review the enclosed documents and contact me if additional information is needed or if there are any questions. Please confirm that this request is scheduled for the October 21, 2025, Planning Commission agenda. Please transmit the meeting agenda and staff report when available. I can be reached at jwocher@mcbridedale.com or 513-561-6232. We look forward to working with the City on this request.

Sincerely,

Jonathan Wocher, AICP, LEED GA

MDC #5486
Copy: George Sakoske & Howard Haven, Glass Coatings & Concepts



LI - LIGHT INDUSTRIAL
HI - HEAVY INDUSTRIAL

INDICATES AREA TO BE RE-ZONED
FROM LI TO HI
AREA=8.6426 ACRES

STATE OF OHIO
JASON L. KAFFENBERGER
8428
REGISTERED PROFESSIONAL SURVEYOR

Jason L. Kaffenberger

tga

THOMAS GRAHAM ASSOCIATES, INC.
803 Compton Road
Cincinnati, Ohio 45231
513-521-4760
Fax # 521-2439

- Engineers
- Surveyors

VICINITY MAP
ADDRESS: 300 LAWTON AVENUE
SITUATED IN
SECTION 12 TOWN 3 RANGE 3
CITY OF MONROE
BUTLER COUNTY
STATE OF OHIO

Scale: 1"=300'	Date: 09-12-2025	
Drawn: JLK	Checked: TGG	Job: 8318-25

GRAPHIC SCALE

50 0 25 50 100

1" = 50'

BASIS OF BEARINGS

North based on bearings contained in Worthington Industries Plat Volume 34 Plat No. 82 Butler County Recorder's Office

BENCHMARK

HORIZONTAL DATUM: NAD 83
VERTICAL DATUM: NAVD 88
ZONE: OHIO SOUTH ZONE

N

THOMAS GRAHAM ASSOCIATES, INC.

• Engineers
• Surveyors

803 Compton Road
Cincinnati, Ohio 45231
513-521-4760
Fax # 521-2439

Date: SEPT. 12, 2025
Scale: 1" = 50'
Job No: 8318

Revisions	
No.	Date

Parcel ID: C1800006000059
Owner: GLASS COATINGS & CONCEPTS LLC
Address: 350 LAWTON AVE

Parcel ID: C1800006000058
Owner: Worthington Steel Company of Ohio Inc
(26.6029 Acres)
Address: 350 LAWTON AVE
O.R. 6247 PG. 2265
O.R. 9994 PG. 125
Butler County Recorder's Office

Parcel ID: C1800006000046
Owner: CHROME DEPOSIT CORP
Address: 341 LAWTON AVE

ZONED LI

ZONED HI

ZONED HI
ZONED LI

ZONED HI
ZONED LI

200.0'

200.0'

200.0'

LAWTON AVENUE
60' R/W
DEDICATED PUBLIC ROADWAY

360.00'

N 01°49'30" E

N 88°05'44" W 1046.04' (S)
N 88°05'45" W 1046.48' (R)

Parcel ID: C1800006000024
Owner: GLASS COATINGS & CONCEPTS LLC
Address: 300 LAWTON AVE
O.R. 7563 PG. 2248
Butler County Recorder's Office

Parcel ID: C1800006000011
Owner: DECEUNINK NORTH AMERICAN LLC
Address: 303 N. GARVER RD

S 01°54'53" W 360.00'

50.0'

Parcel ID: C1800006000021
Owner: CONSOLIDATED RAIL CORP PENNSYLVANIA LINES LLC (PRR)
Address: N GARVER RD

Parcel ID: C1800006000039
Owner: VECAT PROPERTIES LP
Address: 301 LAWTON AVE

POB

POC

25.00'

N 01°49'30" E 25.00'

Parcel ID: C1800006000025
Owner: CITY OF MONROE OHIO
Address: LAWTON AVE

N 88°05'44" W 1045.48'

LOT 1223
VALLEY INDUSTRIAL PARK NORTH TRACT
SECTION TWO
P.B. 26 PG. 50
Parcel ID: C1800006430014
Owner: LAHLOUH OHIO PROPERTS II LLC
Address: LAWTON AVE

LOT 1224
VALLEY INDUSTRIAL PARK NORTH TRACT
SECTION TWO
P.B. 26 PG. 50
Parcel ID: C1800006430003
Owner: KEYSERSOZE LLC
Address: AMERICAN WAY

LOT 1225
VALLEY INDUSTRIAL PARK NORTH TRACT
SECTION TWO
P.B. 26 PG. 50
Parcel ID: C1800006430009
Owner: KEYSERSOZE LLC
Address: 240 AMERICAN WAY

Parcel ID: C1800006000012
Owner: EPHS INVESTMENTS LLC
Address: 203 N. GARVER RD

Parcel ID: C1800006430017
Owner: PERFORMANCE FOOD GROUP INC
Address: 201 LAWTON AVE

ZONED LI

ZONED LI

ZONED LI

ZONING MAP

ADDRESS: 300 LAWTON AVENUE
SITUATED IN
SECTION 12 TOWN 3 RANGE 3
CITY OF MONROE
BUTLER COUNTY
STATE OF OHIO

STATE OF OHIO
JASON L. KAFFENBERGER
8428
REGISTERED PROFESSIONAL SURVEYOR

Jason L. Kaffenberger

Drawn By: J.KAFFENBERGER

Job No: 8318-2025

ACAD FILENAME: 8318_ZONING_GLASS_COATINGS_BASE.DWG

Thomas Graham Associates, Inc.
Engineers • Surveyors

803 Compton Road, Suite A
Cincinnati, Ohio 45231-3819
(513) 521-4760
Fax (513) 521-2439
bobtrenkamp@tgraham.com

September 12, 2025

Legal Description: Area to be Rezoned

Situated in Section 12, Town 3, Range 3, land between the Miami Rivers, City of Monroe, Butler County, State of Ohio, being all of tract conveyed to Glass Coatings & Concepts LLC in Official Record 7563, Page 2248 and being more particularly described as follows:

Commencing at the Northwest corner of Lot 1223 of the Valley Industrial Park North Tract Section Two (Plat Book 26, Page 50 Butler County Recorder's Office) and the existing East right-of-way line of Lawton Avenue, thence departing the said Northwest corner of Lot 1223, with the said existing East right-of-way line of Lawton Avenue, **North 01° 49' 30" East, 25.00 feet** to a found iron pin and the point of beginning of the proposed tract of land; thence continuing with the said existing East right-of-way line of Lawton Avenue, **North 01° 49' 30" East, 360.00 feet**; thence departing the said existing East right-of-way line of Lawton Avenue, **South 88° 05' 44" East, 1,046.04 feet**; thence **South 01° 54' 53" West, 360.00 feet**; thence **North 88° 05' 44" West, 1,045.48 feet** to the point of beginning.

The above-described tract of land contains **8.6426 Acres (376,472.9204 Sq. Ft.)** of land and is subject to all easements and restrictions of record.

Basis of Bearings: Worthington Industries Plat
Volume 34, Plat No. 82
Butler County Engineer's
Record of Land Surveys

This description was prepared from existing records and is not the result of a field survey. This description is to be used for rezoning purposes only.

I hereby certify that this description of the property to be rezoned is a complete, proper, and legal description thereof.

Jason L. Kaffenberger, Registered Land Surveyor #8428 in Ohio

8318-A_Desc_Area to be Rezoned.doc



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bayer becker

bayerbecker.com
513.336.6600
mason | cincinnati | oxford | fort mitchell

September 10, 2025

Ms. Kameryn Jones
Assistant Development Director
City of Monroe
233 S. Main Street
Hamilton, OH 45050

Re: **Tall Oaks (Remainder)**
Preliminary Plat Submission

Dear Kameryn,

Enclosed please find the following items for Preliminary Plat Review for the above referenced project:

1. Executed Application for the Preliminary Plat (sans owner signature)
2. (2) full size copies of the Preliminary Plat
3. (2) full size copies of the Landscape Plan
4. A copy of the Preliminary Drainage Report
5. A copy of the draft HOA Covenants and Restrictions documents

Jeff Hayes will be delivering a check in the amount of $3,940.00 made payable to the *City of Monroe* to cover the application fee to your office this afternoon.

Please place this item on the October 21st planning commission agenda.

If you should have any questions, or need any further information, please do not hesitate to contact me.

Sincerely,

Terri Corner
Project Manager

P: 513-492-9833
E: terricorner@bayerbecker.com
A: 6900 Tylersville Road, Suite A, Mason, OH 45040

Enclosure

cc: CKN Development LLC.

Application for a Major Subdivision

Monroe Development Department
233 South Main Street, Monroe, Ohio 45050
Phone: 513-539-7374
www.monroeohio.gov

For Staff Use Only	
Submittal Date:	
Date Application Determined Complete:	
Date of Planning Commission Review:	
Fee Paid:	Staff Initials:
Application Number:	

Major Subdivision Review Information

1. The major subdivision procedure is required for the approval of subdivisions of six or more lots or a subdivision that will result in the creation of a new street or new/major extension of infrastructure.
2. The major subdivision procedure and review criteria are established in Section 1207.31 and 1207.32 of the Monroe Planning and Zoning Code.
3. Prior to submitting this application, applicants are required to meet with Development Department staff for a pre-application conference. Please contact the department to schedule the conference.
4. The major subdivision process includes the review and decision on a preliminary plat, construction drawings (improvements), bonding, and a final plat.
5. Approval of a preliminary plat does not constitute approval to begin construction on any improvements. Performance guarantees, along with approval of construction drawings, are required prior to construction of any improvements (e.g., streets, sewer, water lines, drainage, etc.).
6. Approval of a final plat does not constitute approval to construct buildings or establish uses. Applicants with approved and recorded final plats are required to submit all other applicable forms (e.g., site plan review, zoning permit, conditional use, etc.).
7. Upon the recording of any plat, the subdivider shall furnish a digital copy of the recorded plat showing the date, plat book and page, etc., as recorded.
8. The application fee is due at the time the application fee is submitted respectively for a preliminary plat, final plat, amendment to a previously approved plat, and construction drawings. The fee schedule is located in Chapter 286 Fees of the Monroe Code of Ordinances.

Basic Project and Site Information (For Original Lot)

For which of the following are you seeking approval?

☑ Preliminary Plat ☐ Construction Drawings ☐ Final Plat ☐ Amendment to a Previously Approved Plat

Project Address: 6339 Hamilton Middletown Road

County: ☑ Butler ☐ Warren | Total Subdivision Area: 101.94

County Tax Parcel ID: C1800012000050 & 51 & 57,C1800012230004,C1800012410031 & 32

Project/Subdivision Name: Tall Oaks (Remainder)

Existing Zoning District: Planned Unit Development

Will new rights-of-way be created? ☑ Yes ☐ No

How many new lots will be created with this subdivision? 187

What is the average lot size in square feet? 10950

What is the average lot width? 71

What is the proposed residential density (dwelling units per acre)? 1.98

Project Address or Tax Parcel ID: C1800012000050 & 51 & 57,C1800012230004,C1800012410031 & 32

Additional Project Information

Does the property lie within the 100-year floodplain? ☑ Yes ☐ No

How many phases of the subdivision do you anticipate? 4

Applicant Information

Applicant Name: CKN Development, LLC

Contact Person: Jeff Hayes

Contact Address: 1768 Happy Valley Drive, Fairfield, OH 45014

Contact Phone Number: 513-846-9311 | Contact Fax Number:

Contact E-Mail: jhayesproperties@yahoo.com

Property Owner Name: William H. Trimble Revocable Trust

The applicant may attach a separate sheet of a paper with contact information for additional people, if necessary (e.g., additional owners, registered engineer, landscape architect, etc.). The same contact information shall be provided for each contact name.

Additional Project Information

1) Provide a brief description of the project including the proposed use of the new lots.

The preliminary plat application includes 187 proposed single family lots, varying in widths of 65', 70' & 90' and 7 non-buildable lots which are to be owned and maintained by the HOA. The project includes construction of public streets and utilities, grading work, landscaping and amenities to serve the proposed single family neighborhood.

2) Will you be requesting a variance of the subdivision design and improvement standards or any applicable site development standards? If yes, please describe the standards you will be requesting to vary and the extent of such variance.

The following waivers of subdivision requirement were requested and approved by Planning Commission and City Council with the Major Modification to the PUD:

1. 1205.03 B.1.a. Block Lengths – Maximum 800'
   a. Due to the configuration of the subject property, topography and the crossing of the 300'+/- gas and electric easements that bisect the development, we cannot comply with the 800' required block length on Winesap Lane/Street C and Street F.
   b. In an attempt to preserve the existing vegetation and pond between Street C, Street D and Street F for a more quality open space area, we request to not be required to provide a mid-block connection of Street D to Street C. Section 1205.03 A.3. indicates that natural features should be considered when applying the block length standard – we believe this applies to the situation.
2. 1205.04 E.2. Number of cul-de-sac lots not to exceed 20% of total lot count
   a. Request an exception for current plan with approximately 26% of lots being cul-de-sac lots due to topography, configuration of subject property and an attempt to preserve natural features.

Project Address or Tax Parcel ID: C1800012000050 & 51 & 57,C1800012230004,C1800012410031 & 32
Certification and Signatures
Applicant Signature - I certify that, to the best of my knowledge, the information contained in this form and within any attachments is correct and truthful. I understand that knowingly falsifying this information may be grounds for the denial or revoking of this application and any subsequent zoning permit or other review applications.
Print Name: Jeff Hayes
Signature: 
Date: 9-9-25
Property Owner Signature - If the property owner is not the named applicant on this form, the property owner shall sign the form below acknowledging that the applicant is an authorized agent of the property owner as it relates to proposed project. If the major subdivision application is for multiple properties, a signature from each property owner is required.
Print Name: Mark Jackson, for William H. Trimble Revocable Trust
Signature:
Date: 9-9-25
Note: A letter signed by the property owner, authorizing the applicant to act on their behalf may be submitted in lieu of the property owner's signature on this form.

Submittal Requirement Checklist All plats and drawings shall be prepared by a professional engineer or surveyor, licensed in Ohio	
Digital Submittal Requirements	
☑	All document applications shall be submitted in a compatible electronic format to planning@monroeohio.gov.
☑	All site plan materials, in map format, shall be submitted in a format compatible with the city's Geographic Information Systems (i.e. shapefile, geodatabase, or dwg) and shall be appropriately projected.
General Information	
☑	Major Subdivision Application Form.
☐	Traffic impact study, if required by the City Engineer. Not required by City Engineer at this point.
☑	Any additional information determined to be necessary by the Development Department.
☑	All plats must comply with the minimum requirements of the applicable county recorder's office and/or tax map supervisor as they have final authority on plat acceptability.
☑	All plats shall have a suitable, prominently lettered title, and border line placed with a margin of not less than 2-inch on all sides. All lettering shall be well-defined in a manner that allows for ease of reproduction (e.g., no lettering in shaded areas).
Location Map (No smaller than 1" = 400') Submitted with all plats, may be submitted on separate sheet or on the individual plat	
☑	Date, north arrow, scale, county, township, and range lines plus a legend for all symbols
☑	Boundary of the proposed subdivision, indicated in heavy lines
☑	All existing and proposed streets related to the subdivision including those existing streets within 500 feet of the proposed subdivision
☑	All surrounding properties, streets, and corporation limits within a minimum of 500' of the outer boundaries of the project site
Preliminary Plat (No smaller than 1" = 100') Paper copies may be required based on project specifics. Final mylars and digital files will be required after approval.	
☑	Application fee
☑	Date, north arrow, scale, county, township, and range lines plus a legend for all symbols
☑	The name of the subdivision
☑	Names and addresses of the owner, subdivider, land planning consultant, engineer or registered land surveyor who prepared the plat
☑	Streets and rights-of-way adjoining and on the site of the proposed subdivision, showing the street names and including roadway widths, approximate gradients, types and width of pavement, curbs, planting strips and other pertinent data
☑	All lot lines adjacent to and abutting the subdivision
☑	Layouts of the lots showing approximate dimensions, lot numbers and centerline radius of streets
☑	Approximate gross square footage of lots not including rights-of-way
☑	Parcels of land proposed to be dedicated or reserved for schools, parks, playgrounds or other public, semipublic or community purposes
☑	Easements, existing and proposed, showing locations, widths and purposes
☑	Building setback and yard lines and dimensions
☑	Location and size of nearest water main, sewer outlet and other pertinent utilities
☑	Location type and approximate size of utilities to be installed
☑	Location and width of all existing and proposed sidewalks and trails
☑	Tract boundary lines showing dimensions, bearings, angles and references to known land lines
☑	Contours at vertical intervals of two feet, if the general slope of the site is less than 16%, and at vertical intervals of five feet if the general slope is 16% or greater

Submittal Requirement Checklist All plats and drawings shall be prepared by a professional engineer or surveyor, licensed in Ohio	
☑	Tree masses and all individual trees having a diameter of 12 inches or greater
☑	A street tree plan including the location and type of proposed street trees
☑	Natural features such as rock outcroppings, streams, creeks, etc. should be defined within the limits of construction indicated.
☑	Location of existing structures
☑	A preliminary copy of the deed restrictions and covenants that would be placed upon the subdivision
☑	Landscaping plans and proposed limits on the location and intensity of signs, advertising and off-street parking in the case of a proposed subdivision for industrial or commercial use.
☑	Location of existing or proposed buried debris
☑	Minimum basement elevations for sanitary sewer service analysis
☑	A Development Summary Chart that should provide a summary of the typical lot size, quantity of lots, number of housing units, total acreage of the development, total acreage (by phase) of open space, total acreage dedicated for each type of use
☑	All survey information shall be tied into horizontal and vertical control provided by the City Engineer
Preliminary Drainage Plan - Submitted as Part of the Preliminary Plat	
☑	A preliminary drainage design that will serve the area being developed and that will is compatible to any adjacent storm drainage system with a clear and unobstructed outlet
☑	The plan shall show the general suitability of the proposed development to support a storm water management system
☑	The plan shall be submitted on a 2-foot topographical contour map and should consist of two parts: • The major system is comprised of the 100-year flood route. The system should be laid out in a manner as to direct all excess storm water into the detention or retention area. • The minor system is comprised of storm sewers, inlets, etc.
☑	That plan shall include: • The approximate size and location of detention or retention facilities, which are required for each subdivision. • The approximate location of any 100-year flood boundary areas.
☑	The developer, owner or their engineer may apply to the Planning Commission for an exception to the detention or retention requirements. Each request shall be accompanied by a study showing the effects of the proposed and required drainage system on the watershed it is located in.
Construction Drawings – The minimum plan size shall be 24" x 36". Paper copies may be required based on project specifics. Final mylars and digital files will be required after approval.	
☐	Application fee
☐	Date, north arrow, scale, and a legend for all symbols
☐	Evidence shall be provided that such plans have been duly approved by the Ohio Environmental Protection Agency, the applicable county health department, or any other governing agencies or departments when approval by such agencies is required by law
☐	Construction drawings showing all improvements, including storm and sanitary sewers, culverts, water and gas mains, with typical cross-sections of streets, profiles and any necessary special details
☐	Map showing division of drainage runoff areas and a complete set of storm water calculations determining pipe or ditch channel sizes and detention/retention volumes and routing
☐	NOTE: In the preparation of construction or improvement plans, every reasonable effort shall be made to avoid placing utility pipe lines, storm and sanitary sewer pipe lines (but not including service connections which must necessarily cross the streets) under pavements or curbs.
☐	As-built drawings.

Submittal Requirement Checklist All plats and drawings shall be prepared by a professional engineer or surveyor, licensed in Ohio	
Final Plat (No smaller than 1" = 100'). Paper copies may be required based on project specifics. Final mylars and digital files will be required after approval.	
☐	Application fee
☐	Date, north arrow, scale, county, township, and range lines plus a legend for all symbols
☐	The name of the subdivision
☐	A copy of the approved preliminary plat, marked to show the outline of the phase being submitted as a final plat
☐	All dimensions shall be shown in feet and decimals of a foot.
☐	Accurate boundary lines, with dimensions and bearings or angles, which provide a survey of the tract, closing with an error of closure of not more than 1 foot in 10,000 feet, thereafter adjusted to close precisely.
☐	Accurate distances and directions to the nearest established street corner or official monuments. Reference comers shall be accurately described on the final plat.
☐	Accurate locations of all existing and recorded streets intersecting the boundaries of the tract.
☐	All data that would be necessary for an accurate metes and bounds legal description of the property included. The area shall be shown to the nearest 1/1,000 of an acre.
☐	Right-of-way lines of streets, easements and other rights-of-way, and property lines of lots and other tracts, with accurate dimensions, bearings and curve data, including radii, arcs, lengths, points of tangency and central angles.
☐	Name and right-of-way width for each street or other right-of-way.
☐	Location, dimensions and purposes of any easement shown by lightly dashed lines.
☐	Location of swales, ditches, storm sewers and any other drainage systems.
☐	Number to identify each lot or site, using lot numbers designated by the County Auditor, where the Auditor has such designation.
☐	Building setback or yard lines and dimensions.
☐	Location, type and material of all monuments and lot markers.
☐	Names of owners adopting such plat, with owner or owners' signatures properly notarized.
☐	Deed or acknowledgments, protective covenants or restrictions, statements of dedication of streets or roadways personally signed by owner or owners and duly notarized. (Mortgage release shall be provided for all dedicated streets or public areas where subdivided land is mortgaged, and shall be of record when plat is approved by Council.)
☐	Names of recorded owners of adjoining unplatted land, shown by medium dashed lines.
☐	Reference to recorded subdivision plats of adjoining platted land by recorded name, plat book and page, shown by medium dashed lines.
☐	Restrictions which will run with the land and become covenants in the deeds for lots. Where restrictions and protective covenants become of considerable length, they may be filed on a separate instrument with reference on the plat indicating book and page where instrument is recorded.
☐	Certification by the registered surveyor with registration number and seal affixed to all documents of the final plat
☐	Certification by the registered surveyor or registered professional engineer, stating that all lot dimensions and areas conform to the requirements of the zoning district in which it is located
☐	Deed of dedication of all public area
☐	Certificate for approval by the Director of Development
☐	Certificate for approval by the City Engineer
☐	Certificate for approval by the Board of Health and/or the Butler County Sanitary Engineer
☐	Certificate for approval by Council

Submittal Requirement Checklist All plats and drawings shall be prepared by a professional engineer or surveyor, licensed in Ohio	
☐	Where numerous existing lots are being replatted, the record plat shall also be accompanied by a Title Reference Plat, which shall show the new lots in solid lines superimposed over the old lots shown in short dash lines. This plat shall be made for recording purposes.
☐	Letters from each utility not controlled by the City indicating that the facilities and structures have passed inspection, if installed by developer's contractor.
☐	Reference to a homeowner's association or similar legal entity's responsibility to perpetually maintain all detention/retention basins where applicable and include a photocopy of the perpetual maintenance agreement to be recorded along with the final plat documents.

bayer becker

bayerbecker.com
513.336.6600
mason | cincinnati | oxford | fort mitchell

October 13, 2025

Ms. Kameryn Jones
Assistant Development Director
City of Monroe
233 S. Main Street
Hamilton, OH 45050

Re: **Tall Oaks (Remainder)**
Preliminary Plat - Revised

Dear Kameryn,

Enclosed please find the following items for Preliminary Plat Review for the above referenced project:

1. (2) full size copies of the Revised Preliminary Plat
2. (2) full size copies of the Revised Landscape Plan
3. A copy of the Preliminary Drainage Report

The following revisions were made as per Staff Comments received October 3, 2025:

Department of Development

1. Open Space / Landscaping
   - The landscape plan was updated as per our meeting on 9-30-25.
     - Street trees were placed in a consistent manor. For all trees that cannot be placed in the tree lawn, alternate locations were found for them in the open space lots in the areas requested.
     - For the street trees located in cul-de-sacs and knuckles that cannot be placed in the tree lawn, a "Public Vegetation Easement" has been added in the front yard setback as an alternate location.
     - Notes were added to the Landscape Plan regarding acceptable alternate locations for street trees and potential deviance from the minimum distance of 40' between trees within the tree lawn.
     - Alternate Tree Placement Areas were added to the Landscape Plan.

Fire Department

1. **Persimmon Lane Turnaround**
   - It is understood that the temporary turnaround shall remain permanent until the street is extended in the future.
   - The temporary turnaround was re-configured as per Ohio Fire Code Appendix D dimensions and is fully contained within the public right-of-way and the open space lot. We request that lots 170 & 171 be permitted to be developed along with the entirety of phase five prior to the temporary turnaround being removed, as it is unclear when Persimmon Lane will be extended in the future.
2. **Fire Lane Signage**
   - It has been added to the General Notes that "No Parking – Fire Lane" signs must be posted on one side of all roads.

- It has been added to the General Notes that the Fire Lane signs must be installed on the same side of the street as the fire hydrants.

3. **Cul-de-sac Signage**
   - It has been added to the General Notes that "No Parking – Fire Lane" signs must be posted in cul-de-sacs.
4. **Secondary Access Requirement**
   - It has been added to the General Notes that no more than 30 units may be constructed north of the gas easements until a secondary access point has been completed for the project.

Public Works / Engineering

1. It is understood that the developer must submit CTV Inspections of the existing storm pipes and a letter from Butler County Water & Sewer Department that the existing water and sanitary sewer pipes are accepted and meet all current standards. These items will be provided during the construction drawing review process.
2. The typical roadway section has been updated as per current City of Monroe standards.
3. It is our understanding that several of the existing storm structures were buried without the Top of Grates/Structures in place during construction of Phase One. All existing storm structures and pipes will be located and CTV Inspections completed prior to the design process beginning.
4. Lots #62 & #63 have extra width to accommodate houses.
5. The approximate location and size of the existing culverts under the railroad have been shown on the plan. They will be located by our survey crews and represented on the construction drawings accurately.

Fishbeck

1. A concise statement identifying the selected critical storm and the rationale for its selection based on the routed hydrograph results has been added to the Site Description on page 3 of the Preliminary Drainage Report.
2. A complete storm sewer design, including pipe sizes, materials and HGLs will be provided during the construction drawing review process. The storm sewer will be designed according to City of Monroe standards and specifications.
3. A Maintenance and Operations Manual will be included with the Final Design Stormwater Management Plan as per City of Monroe standards and specifications during the construction drawing review process.
4. The floodplain limits have been better delineated on the plan.
5. The Limits of Disturbance has been added to the plan.
6. A complete storm sewer design, including pipe sizes, materials and HGLs will be provided during the construction drawing review process. The storm sewer will be designed according to City of Monroe standards and specifications. The spillway overflow locations have been labeled on the plan as "100 YR.DR.RT." but are subject to change with final design.
7. The walking paths for the development will not connect to the Great Miami Trail.
8. The development was granted a waiver for the 20% cul-de-sac rule during the Major Modification to the PUD process.
9. Cul-de-sac radii at the right-of-way and back of curb have been adjusted to City of Monroe standards.

10. It is understood that the slopes of the detention basins shall meet City of Monroe and OEPA standards and design specifications and shall not encroach within the existing gas easements.
11. The site will be analyzed by an environmental engineer to determine if there are any WOTUS or wetlands prior to the beginning of the design process.
12. The open space on the west side of the railroad has been labeled on the plan. It does not contain any features and is considered passive open space.

If you should have any questions, or need any further information prior to the October 21st Planning Commission meeting, please do not hesitate to contact me.

Sincerely,

Terri Corner
Project Manager

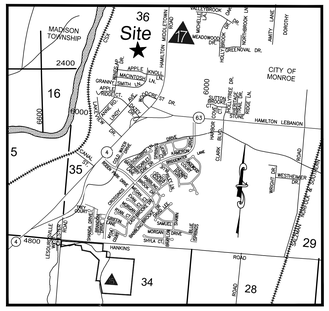
P: 513-492-9833
E: terricorner@bayerbecker.com
A: 6900 Tylersville Road, Suite A, Mason, OH 45040

Enclosure

cc: CKN Development LLC.

PRELIMINARY PLAT
TALL OAKS
REMAINDER

SECTION 36, TOWN 3, RANGE 3
CITY OF MONROE, BUTLER COUNTY, OHIO
SEPTEMBER, 2025
REVISED OCTOBER 10, 2025



VICINITY MAP
NOT TO SCALE

OWNER

William H. Trimble
Revocable Trust
2003 Beechglen Court
Cincinnati, OH 45233

DEVELOPER

CKN Development,LLC.
1768 Happy Valley Drive
Fairfield, OH 45014
(513) 846-9311

ENGINEER/SURVEYOR

Bayer Becker
6900 Tylersville Road, Suite A
Mason, Ohio 45040
513-336-6600


PHASE FIVE
PHASE FOUR
PHASE ONE, BLOCK A
PHASE THREE
PHASE TWO
TUPELO DRIVE
CATALPA WAY
WINESAP LANE
LOCUST LANE
PERSIMMON LANE
AUTUMN OAK DRIVE
TALL OAKS DRIVE
LINDEN DRIVE
SHUMARD COURT
GRANNY SMITH LANE
BUCKEYE DRIVE
APPLE KNOLL LANE
WOODBINE WAY
HAMILTON-MIDDLETOWN ROAD (S.R.4)
RETENTION POND #1
RETENTION POND #2
RETENTION POND #3
RETENTION POND #4
OPEN SPACE
LIMITS OF DISTURBANCE
W. WALKING TRAIL
S84°32'58"E 2018.39'
N84°48'34"W 36.47'
S84°58'27"W 661.13'
N85°11'08"W 273.60'
S88°34'23"E 367.65'
N85°59'45"W 2015.67'
S85°59'3"E 151.53'
N12°17'50"E 3.46'
N75°02'00"W 202.67'
S11°19'27"W 24.56'
N85°56'14"W 61.92'
S09°33'43"W 50.00'
S85°56'14"E 61.63'
S04°10'3"W 145.27'
N85°58'02"W 147.33'
S05°11'22"W 499.92'
N14°08'40"E 230.05'
N27°31'18"W 59.05'
N85°20'03"W 205.54'
N83°56'37"W 171.96'
N81°03'20"W 80.00'
N88°58'54"W 76.26'
S86°10'18"W 187.59'
N86°33'54"W 110.11'
N81°50'22"W 97.48'
N75°51'20"W 354.10'
S11°25'10"W 261.59'
S03°39'22"E 109.61'
S81°03'29"E 333.38'
N05°24'50"E 378.81'
S15°17'05"W 34.72'
S11°30'19"W 151.68'
S49°56'29"W 118.44'
S40°56'20"W 280.45'
S19°22'24"W 264.73'
N19°32'45"E 251.13'
N39°40'15"E 310.52'
N00°35'01"E 59.56'
N09°47'15"E 114.85'
N27°36'41"E 18.05'
N17°45'02"E 166.22'
N12°19'9"E 74.45'
N10°56'08"E 181.71'
N27°29'0"E 620.04'
S15°02'00"W 545.37'
S04°58'27"W 280.13'
S11°17'50"W 261.59'
S85°59'45"W 2015.67'
S85°56'14"E 61.63'
S09°33'43"W 50.00'
N85°56'14"W 61.92'
S11°19'27"W 24.56'
S83°14'52"E 211.79'
S78°41'12"E 58.73'
D=4°44'16"
L=39.28'
R=475.00'
39.27'
D=5°50'25"
L=104.48'
R=1025.00'
104.43'
D=88°34'43"
L=38.65'
R=25.00'
34.91'
D=89°57'45"
L=39.25'
R=25.00'
35.34'
D=4°48'37"
L=44.08'
R=525.00'
44.06'
D=126°58'22"
L=55.40'
R=25.00'
44.74'
R=1025.00'
R=475.00'
R=525.00'
R=25.00'
R=1000.00'
R=500.00'
R=1050.00'
R=450

PRELIMINARY PLANTING PLAN
TALL OAKS
SECTION 36, TOWN 3, RANGE 3
CITY OF MONROE, BUTLER COUNTY, OHIO
MARCH, 2025
REVISED APRIL 29, 2025
REVISED OCTOBER 10, 2025

DEVELOPER
CKN Development,LLC.
1768 Happy Valley Drive
Fairfield, OH 45014
(513) 846-9311

LANDSCAPE ARCHITECT/ENGINEER/SURVEYOR
Bayer Becker
6900 Tylersville Road, Suite A
Mason, Ohio 45040
513-336-6600

ZONING NOTES
CHAPTER 1204 DEVELOPMENT & DESIGN STANDARDS

ARTICLE 4.02 OPEN SPACE STANDARDS
1204.03 GENERAL PROVISIONS

B) AMOUNT OF OPEN SPACE REQUIRED. DEVELOPMENT SHALL PROVIDE AT LEAST THE MINIMUM AMOUNT OF OPEN SPACE DICTATED BY THE ZONING DISTRICT IN CHAPTER 1202, ZONING DISTRICT ESTABLISHED. AND THE FOLLOWING:

1) MINIMUM OPEN SPACE SET ASIDE. DEVELOPMENT SHALL PROVIDE AT LEAST THE MINIMUM AMOUNT OF OPEN SPACE IDENTIFIED IN TABLE 1204.03-1, OPEN SPACE SET-ASIDE

- ANY RESIDENTIAL PUD REQUIRES 20% TOTAL OPEN SPACE INCLUDING 5% FORMAL OPEN SPACE

ARTICLE 04.05 LANDSCAPING, SCREENING, & BUFFERING
1204.19 GENERAL PROVISIONS

D. LANDSCAPE MATERIAL STANDARDS.

3. PLANTS.

G) DECIDUOUS AND EVERGREEN CANOPY OR SHADE TREES SHALL HAVE A MINIMUM OF 2.5 INCHES DIAMETER AT BREAST HEIGHT (DBH) AT THE TIME OF PLANTING, AS DETERMINED IN THE AMERICAN STANDARD FOR NURSERY STOCK. EVERGREENS SHALL ALSO BE A MINIMUM OF SIX FEET IN HEIGHT ABOVE GROUND AT THE TIME OF PLANTING. WHILE DECIDUOUS TREES SHALL ALSO BE A MINIMUM OF EIGHT FEET IN HEIGHT ABOVE GROUND LEVEL AT THE TIME OF PLANTING.

H) UNDERSTORY, SMALL MATURING, OR ORNAMENTAL TREES SHALL HAVE A MINIMUM OF TWO INCHES DIAMETER AT BREAST HEIGHT (DBH) AT THE TIME OF PLANTING, AS DETERMINED IN THE AMERICAN STANDARD FOR NURSERY STOCK AND SHALL BE A MINIMUM OF SIX FEET IN HEIGHT ABOVE GROUND LEVEL AT THE TIME OF PLANTING.

I) ALL DECIDUOUS TREES SHALL BE STAKED OR OTHERWISE SUPPORTED AS APPROPRIATE TO GROW STRAIGHT.

J) ALL TREES SHALL BE MULCHED AROUND THE BASE OF THE TRUNK WITH A MINIMUM DIAMETER OF THREE FEET OF MULCH.

K) THE USE OF NATIVE, DROUGHT-TOLERANT VEGETATION IS ENCOURAGED TO REDUCE DEPENDENCY UPON IRRIGATION.

L) ONCE THE MINIMUM LANDSCAPE REQUIREMENTS HAVE BEEN MET, ANY SIZE PLANT MAY BE INSTALLED ON A LOT TO SUPPLEMENT THE MINIMUM REQUIREMENTS.

5) GRASS OR GROUND COVER. GRASS OF THE FESCUS (GRAMINEAK) OR BLUEGRASS (POACEAE) FAMILY SHALL BE PLANTED IN SPECIES NORMALLY GROWN AS PERMANENT LAWNS IN THE APPLICABLE COUNTY.

6) MULCHED LANDSCAPED AREAS. REQUIRED LANDSCAPING SHALL BE LOCATED IN MULCHED LANDSCAPED BEDS WITH A MINIMUM WIDTH OF THREE FEET IN ALL DIRECTIONS.

7) SPECIES DIVERSITY.

B) WHEN 40 OR MORE TREES ARE REQUIRED ON A SITE, AT LEAST FOUR DIFFERENT SPECIES SHALL BE UTILIZED, IN ROUGHLY EQUAL PROPORTIONS

E. STREET TREES.

1) STREET TREES SHALL BE REQUIRED ON ALL PUBLIC AND PRIVATE FRONTAGES, EXCEPT INTERSTATE FRONTAGE AND ALLEYS, FOR ALL SUBDIVISIONS, NEW SITES OR DEVELOPMENT, AND EXPANSIONS OF SITES OR DEVELOPMENTS.

2) ALL NEW ROADS OR EXTENSIONS OF EXISTING ROADS, PUBLIC OR PRIVATE WHETHER INTERNAL OR EXTERNAL TO A SITE, ARE SUBJECT TO THE STREET TREE REQUIREMENTS.

3) STREET TREES SHALL BE REQUIRED ALONG BOTH SIDES OF ALL STREETS, PUBLIC OR PRIVATE, PLANTED 40 FEET ON CENTER IN THE TREE LAWN.

4) ALL DEVELOPMENTS SHALL INCLUDE STREET TREES THAT COMPLY WITH THE REQUIREMENTS FOR PLANTS IN 1204.19(D), LANDSCAPE MATERIAL STANDARDS, ABOVE.

5) SPECIFIC TREE TYPES OR SPECIES PROHIBITED OR PERMITTED TO BE INSTALLED WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE ESTABLISHED IN A DOCUMENT MAINTAINED BY THE DEVELOPMENT DEPARTMENT.

6) STREET TREE PLACEMENT MAY BE SUBJECT TO SETBACK REQUIREMENTS FROM THE CURB, SIDEWALK, DRIVEWAY, AND OTHER UTILITIES. SUCH RESTRICTIONS SHALL BE ESTABLISHED IN A DOCUMENT MAINTAINED BY THE DEVELOPMENT DEPARTMENT.

7) AT THE TIME OF PLANTING, THE LOWEST LIMB OF ANY TREE SHALL NOT BE LESS THAN FIVE FEET ABOVE THE GROUND.

PROHIBITED STREET TREES:
- ANY NUT OR FRUIT BEARING TREE
- ASH - WHITE, GREEN, & EUROPEAN MOUNTAIN
- BIRCH
- BLACK LOCUST
- BLACK WALNUT
- BOX ELDER
- BUCKEYE
- BUCKTHORN
- CATALPA
- COTTONWOOD
- ELM - AMERICAN, CHINESE, RED, SIBERIAN

*ANY TREE DETERMINED TO BE INVASIVE BY THE OHIO DEPT OF AGRICULTURE OR OHIO DEPT OF NATURAL RESOURCES. *

PREFERRED STREET TREES:
- BLACKGUM - TUPELO TOWER, WILDFIRE, GREEN GABLE, FIRESTARTER
- ELM - ALLEE LACEBARK, ATHENA LACEBARK, FRONTIER
- FREEMAN MAPLE - ARMSTRONG, MARMO, CELEBRATION
- GINGKO (MALE) - PRINCETON SENTRY, MAGYAR, PRESIDENTIAL GOLD, COLONNADE
- HONEY LOCUST - SUNBURST, SKYLINE, SHADEMASTER
- KENTUCKY COFFEE- ESPRESSO, TRUE NORTH
- LINDEN- BOULEVARD, GREENSPIRE, AMERICAN SENTRY

* SPECIFIC TREES NOT ON THIS LIST MAY BE SUBMITTED FOR CONSIDERATION. *

PLANTING REQUIREMENTS
- 14,991 LF / 40 LF = **375 STREET TREES REQUIRED**
- <40 TREES ON SITE - MINIMUM OF 3 SPECIES REQUIRED
- NO MORE THAN 3-5 TREES OF SAME SPECIES MAY BE PLANTED IN A ROW

NOTES:
1. IF STREET TREES CANNOT BE PLACED WITHIN THE TREE LAWN DUE TO CONFLICTS WITH DRIVEWAYS, UTILITIES, STREET LIGHTS, ETC., THEY SHALL BE PLACED IN ANY OF THE ZONES DESIGNATED ON THIS PLAN AS "ALTERNATE TREE PLACEMENT AREA".

2. FOR CUL-DE-SAC AND KNUCKLE LOTS - IF TREES CANNOT BE PLACED IN TREE LAWN DUE TO CONFLICTS WITH DRIVEWAYS, UTILITIES, STREET LIGHTS, ETC., THEY CAN BE PLACED WITHIN THE PLATTED PUBLIC VEGETATION EASEMENT.

3. DEVIATION FROM THE MINIMUM DISTANCE OF 40' BETWEEN STREET TREES IN THE TREE LAWN WILL BE PERMITTED IF TOO MANY CONFLICTS FROM OFFSET REQUIREMENTS FROM DRIVEWAYS, UTILITIES, ETC. RESTRICT PLACEMENT AS PER CITY OF MONROE ZONING CODE. MINIMUM SEPARATION DISTANCE ALLOWABLE WILL BE 30'.

CONCEPT GRAPHICS SCHEDULE

EXISTING VEGETATION
Takeoff: 37,714 cy

ALTERNATE TREE PLACEMENT AREA
Takeoff: 73,797 sf



PLANT SCHEDULE

CODE	QTY	BOTANICAL NAME	COMMON NAME	TYPE	MIN. SIZE
DECIDUOUS TREES					
ACE AUT	4	Acer rubrum 'Autumn Blaze'	Autumn Blaze Red Maple	B & B	2.0" Cal
ACE SUN	32	Acer rubrum 'Red Sunset'	Red Sunset Maple	B & B	2.0" Cal
BET HER	4	Betula nigra 'Heritage'	Heritage River Birch	B & B	2.0" Cal
GIN AUT	37	Ginkgo biloba 'Autumn Gold' TM	Autumn Gold Ginkgo	B & B	2.0" Cal
GYM DIO	41	Gymnocladus dioica 'Espresso'	Kentucky Coffeetree	B & B	2.0" Cal
LIQ ROT	17	Liquidambar styraciflua 'Rotundiloba'	Fruitless Sweetgum	B & B	2.0" Cal
LIR TUL	27	Liriodendron tulipifera	Tuliptree	B & B	2.0" Cal
NYS SYL	9	Nyssa sylvatica 'Tupelo Tower'	Tupelo Tower Black Gum	B & B	2.5" Cal
PLA BLZ	11	Platanus x acerifolia 'Bloodgood'	London Plane Tree	B & B	2.0" Cal
QUE BIC	11	Quercus bicolor	Swamp White Oak	B & B	2.0" Cal
QUE COC	4	Quercus coccinea	Scarlet Oak	B & B	2.0" Cal
TAX DIS	2	Taxodium distichum	Bald Cypress	B & B	2.0" Cal
TIL GRE	39	Tilia cordata 'Greenspire'	Greenspire Littleleaf Linden	B & B	2.0" Cal
ULM ALL	38	Ulmus parvifolia 'Emer II' Allee	Allee Lacebark Elm	B & B	2.0" Cal
	276	SUBTOTAL:			
EVERGREEN TREES					
PIC OMO	8	Picea omorika	Serbian Spruce	B & B	6' Ht.
PIN BUN	4	Pinus bungeana	Lacebark Pine	B & B	6' Ht.
PIN STR	16	Pinus strobus	White Pine	B & B	6' Ht.
THU GR2	5	Thuja plicata 'Green Giant'	Green Giant Arborvitae	B & B	6' Ht.
	33	SUBTOTAL:			
ORNAMENTAL TREES					
AME GRZ	9	Amelanchier x grandiflora 'Autumn Brilliance'	Autumn Brilliance Serviceberry	B & B	1.5" Cal
CER AP2	48	Cercis canadensis 'Appalachian Red'	Appalachian Red Eastern Redbud	B & B	1.5" Cal
SYR IVO	17	Syringa reticulata 'Ivory Silk'	Ivory Silk Japanese Tree Lilac	B & B	2.5" Cal
	74	SUBTOTAL:			

Basis of Bearing
State Plane NAD83 (2011)
0 100 150
SCALE: 1" = 100'

Item	Revision Description	Date	Drawn	Chk.
1.	Revised as per Staff Comments dated 10-3-25	10-10-25	CDS	

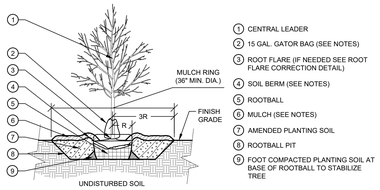
TALL OAKS
SECTION 36, TOWN 3, RANGE 3
CITY OF MONROE, BUTLER COUNTY, OHIO
PLANTING PLAN

bayer becker
www.bayerbecker.com
6900 Tylersville Road, Suite A
Mason, OH 45040 513.336.6600

Drawing: 24-0202 PP
Drawn by: CDS
Checked By: ADH
Issue Date: 9-10-25
Sheet: 1/3

Zoned RC

Plot time: Oct 13, 2025 - 11:38am
Drawing name: J:\2024\24-0202\CAD\PWG\24-0202 PP.DWG - Layout Tab: 1 OF 3 PLANTING PLAN

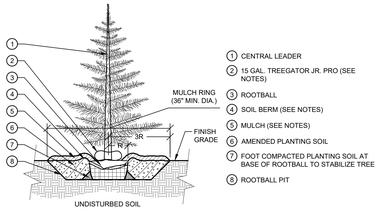


1. CENTRAL LEADER
2. 15 GAL. GATOR BAG (SEE NOTES)
3. ROOT FLARE (IF NEEDED SEE ROOT FLARE CORRECTION DETAIL)
4. SOIL BERM (SEE NOTES)
5. ROOTBALL
6. MULCH (SEE NOTES)
7. AMENDED PLANTING SOIL
8. ROOTBALL PIT
9. FOOT COMPACTED PLANTING SOIL AT BASE OF ROOTBALL TO STABILIZE TREE

NOTES:
- A. REMOVE ALL TWINE, ROPE, WIRE, AND BURLAP FROM TOP 1/3 OF ROOTBALL.TOP OF ROOTBALL TO BE FLUSH WITH FINISH GRADE AFTER SETTLEMENT. ROOT FLARE 1" ABOVE FINISH GRADE.
- B. BOTTOM OF ROOT BALL TO REST ON EXISTING OR RE-COMPACTED SOIL.
- C. TREE PIT TO BE THREE TIMES THE WIDTH OF THE ROOTBALL.
- D. SCARIFY BOTTOM AND SIDES OF TREE PIT TO 4" MIN. DEPTH.
- E. SUBSOIL AND TOPSOIL REMOVED FROM EXCAVATIONS MAY BE USED AS PLANTING SOIL PROVIDED IT IS FREE OF ROCKS & DELETERIOUS MATERIALS. TOPSOIL AMENDED PER SOIL TESTING REPORT.
- F. SOIL BERM 4" HIGH X 8" WIDE ABOVE ROOT BALL SURFACE SHALL BE CONSTRUCTED AROUND THE ROOT BALL. BERM SHALL BEGIN AT ROOT BALL PERIPHERY.
- G. MULCH RING (SEE SPECIFICATIONS FOR DEPTH) AROUND TRUNK. MINIMUM 36" RADIUS DO NOT PLACE MULCH WITHIN 3" OF TRUNK.
- H. GATOR BAG TO BE INSTALLED & FILLED PER MANUFACTURER'S SPECIFICATIONS ON ALL TREES WHEN INSTALLED BETWEEN JUNE - AUG. 1"-4" CALIPER (1 BAG), 5"-8" (2 BAGS).
- I. TREES UNDER 5" CALIPER ARE NOT REQUIRED TO BE GUYED UNLESS LOCATED ON SLOPES GREATER THAN 3:1 OR IN A WINDY LOCATION OR OTHER WISE DETERMINED NECESSARY.

1 TYP. TREE PLANTING DETAIL

NOT TO SCALE — P-DET-AL25-01

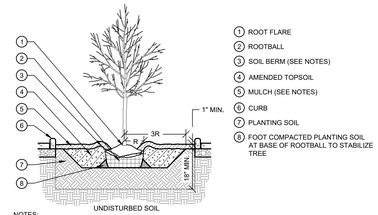


1. CENTRAL LEADER
2. 15 GAL. TREEGATOR JR. PRO (SEE NOTES)
3. ROOTBALL
4. SOIL BERM (SEE NOTES)
5. MULCH (SEE NOTES)
6. AMENDED PLANTING SOIL
7. FOOT COMPACTED PLANTING SOIL AT BASE OF ROOTBALL TO STABILIZE TREE
8. ROOTBALL PIT

NOTES:
- A. REMOVE ALL TWINE, ROPE, WIRE, AND BURLAP FROM TOP 1/3 OF ROOTBALL.TOP OF ROOTBALL TO BE FLUSH WITH FINISH GRADE AFTER SETTLEMENT. ROOT FLARE 1" ABOVE FINISH GRADE.
- B. BOTTOM OF ROOT BALL TO REST ON EXISTING OR RE-COMPACTED SOIL.
- C. TREE PIT TO BE THREE TIMES THE WIDTH OF THE ROOTBALL.
- D. SCARIFY BOTTOM AND SIDES OF TREE PIT TO 4" MIN. DEPTH.
- E. SUBSOIL AND TOPSOIL REMOVED FROM EXCAVATIONS MAY BE USED AS PLANTING SOIL PROVIDED IT IS FREE OF ROCKS & DELETERIOUS MATERIALS. TOPSOIL AMENDED PER SOIL TESTING REPORT.
- F. SOIL BERM 4" HIGH X 8" WIDE ABOVE ROOT BALL SURFACE SHALL BE CONSTRUCTED AROUND THE ROOT BALL. BERM SHALL BEGIN AT ROOT BALL PERIPHERY.
- G. MULCH RING (SEE SPECIFICATIONS FOR DEPTH) AROUND TRUNK. MINIMUM 36" RADIUS DO NOT PLACE MULCH WITHIN 3" OF TRUNK.
- H. GATOR BAG TO BE INSTALLED & FILLED PER MANUFACTURER'S SPECIFICATIONS ON ALL TREES WHEN INSTALLED BETWEEN JUNE - AUG.

2 TYP. EVERGREEN PLANTING DETAIL

NOT TO SCALE — P-DET-AL25-02



1. ROOT FLARE
2. ROOTBALL
3. SOIL BERM (SEE NOTES)
4. AMENDED TOPSOIL
5. MULCH (SEE NOTES)
6. CURB
7. PLANTING SOIL
8. FOOT COMPACTED PLANTING SOIL AT BASE OF ROOTBALL TO STABILIZE TREE

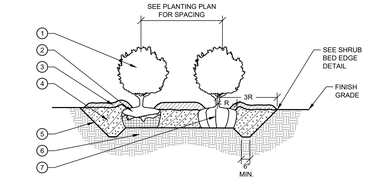
NOTES:
- A. REMOVE ALL TWINE, ROPE, WIRE, AND BURLAP FROM TOP 1/3 OF ROOTBALL.TOP OF ROOTBALL TO BE FLUSH WITH FINISH GRADE AFTER SETTLEMENT. ROOT FLARE 1" ABOVE FINISH GRADE.
- B. BOTTOM OF ROOT BALL TO REST ON EXISTING OR RE-COMPACTED SOIL.
- C. TREE PIT TO BE THREE TIMES THE WIDTH OF THE ROOTBALL.
- D. SCARIFY BOTTOM AND SIDES OF TREE PIT TO 4" MIN. DEPTH.
- E. SOIL SHALL BE EXCAVATED A MINIMUM OF 18" IN TREE ISLAND.SUBSOIL AND TOPSOIL REMOVED FROM EXCAVATIONS MAY BE USED AS PLANTING SOIL PROVIDED IT IS FREE OF ROCKS & DELETERIOUS MATERIALS. TOPSOIL AMENDED PER SOIL TESTING REPORT.
- F. BACKFILL TREE PIT WITH SPECIFIED SOIL MIX. COMPACT IN 6 INCH LIFTS.
- G. SOIL BERM 4" HIGH X 8" WIDE ABOVE ROOT BALL SURFACE SHALL BE CONSTRUCTED AROUND THE ROOT BALL. BERM SHALL BEGIN AT ROOT BALL PERIPHERY.
- H. MULCH (SEE SPECIFICATIONS FOR DEPTH). DO NOT PLACE MULCH WITHIN 3" OF TRUNK. TOP OF MULCH SHALL BE A MINIMUM OF 1" BELOW ADJACENT CURB/WALK FOR MULCH CONTAINMENT.
- I. SEE TYP. TREE PLANTING DETAIL FOR TREE WRAP AND WATERING REQUIREMENTS.

3 TREE ISLAND PLANTING

NOT TO SCALE

GENERAL LANDSCAPE NOTES

- A. REFER TO LANDSCAPE SPECIFICATIONS FOR ADDITIONAL INSTALLATION REQUIREMENTS.
- B. THE CONTRACTOR SHALL VISIT THE SITE AND COMPLETELY REVIEW THESE DOCUMENTS AND FULLY UNDERSTAND THE NATURE AND SCOPE OF WORK NEEDED TO ACHIEVE THE FINISHED PRODUCT INTENDED BY THE OWNER. IN ADDITION, THE CONTRACTOR SHALL AT ONCE REPORT TO THE LANDSCAPE ARCHITECT, INACCURACIES OR INCONSISTENCIES DISCOVERED. FAILURE TO REASONABLY RECOGNIZE OR NOTIFY THE LANDSCAPE ARCHITECT OF SUCH ITEMS SHALL RELEASE THE LANDSCAPE ARCHITECT AND OWNER OF ALL LIABILITY. ANY DEVIATIONS FROM THESE DOCUMENTS WITHOUT WRITTEN APPROVAL FROM THE LANDSCAPE ARCHITECT SHALL BE CORRECTED AT THE CONTRACTORS EXPENSE.
- C. PRIOR TO CONSTRUCTION, THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS NECESSARY TO COMPLETE THE WORK, LOCATING ALL UNDERGROUND UTILITIES, AND SHALL AVOID DAMAGE TO ALL UTILITIES DURING INSTALLATION. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL DAMAGE TO UTILITIES, STRUCTURES, SITE APPURTENANCES, ETC., WHICH MAY OCCUR AS A RESULT OF LANDSCAPE CONSTRUCTION.
- D. CONTRACTOR MUST CERTIFY THAT ITS SAFETY PROGRAM MEETS REGULATORY REQUIREMENTS AT A MINIMUM. CONTRACTOR TO PROVIDE DOCUMENTATION OF THE OSHA RECORD KEEPING SUMMARY.
- E. REFER TO BID DOCUMENTS AND COMPLY WITH ALL STATE & LOCAL TRAFFIC AND SAFETY REQUIREMENTS REGARDING APPROVED WORK TIMES, SCHEDULING OF INSTALLATION, AND ALL OTHER REQUIREMENTS.
- F. LANDSCAPE CONTRACT IS RESPONSIBLE FOR COORDINATING WITH OTHER CONTRACTORS AND/OR LOCATING PROPOSED SITE UTILITIES, STORM STRUCTURES, EASEMENTS, ETC.
- G. ALL PLANT MATERIAL MUST BE INSTALLED ACCORDING TO THE APPROVED LANDSCAPING PLAN BY NO LATER THAN THE NEXT PLANTING SEASON OR WITHIN 6 MONTHS FROM THE COMPLETION OF ALL SITE CONSTRUCTION.
- H. CONTRACTOR TO VERIFY ALL PLANT QUANTITIES. ANY DISCREPANCY BETWEEN THE PLANTING LIST AND THE PLAN SHALL BE VERIFIED BY THE LANDSCAPE ARCHITECT. ALL SUBSTITUTIONS AND/OR CHANGES SHALL BE REQUESTED IN WRITING TO THE OWNER OR OWNER'S REPRESENTATIVE AND BE APPROVED BY THE LANDSCAPE ARCHITECT AND THE LOCAL MUNICIPALITY (IF REQUIRED) PRIOR TO INSTALLATION.
- I. INSTALL PLANTS - REFER TO TYPICAL PLANTING DETAILS FOR PLANT INSTALLATION.
- J. IT IS THE CONTRACTOR'S OPTION WHETHER OR NOT TO STAKE A TREE UNDER 5" CALIPER, BUT IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ASSURE THAT PLANTS REMAIN IN AN UPRIGHT POSITION UNTIL THE END OF THE WARRANTY PERIOD, AT WHICH POINT ANY STAKES & WIRE ARE TO BE REMOVED BY THE CONTRACTOR.
- K. LANDSCAPE CONTRACTOR SHALL INSTALL GATOR BAGS, PER MANUFACTURER'S RECOMMENDATION FOR ALL TREES THAT ARE NOT OTHERWISE IRRIGATED. GATOR BAGS TO BE INSTALLED AND FILLED BETWEEN JUNE AND AUGUST. (1) BAG REQUIRED FOR 1" - 4" CALIPER TREES AND (2) BAGS REQUIRED FOR 5"-8" CALIPER TREES.
- L. LANDSCAPE CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE FROM ALL PLANT BEDS WITHOUT ADVERSELY AFFECTING SITE DRAINAGE. GRADES BEHIND CURBS FOR AREAS TO RECEIVE MULCH SHALL BE HELD 4 INCHES BELOW TOP OF CURB AND 2 INCHES BELOW TOP OF CURB FOR SOD.
- M. CONTRACTOR TO RUN PERCOLATION TESTS TO ASSURE PROPER DRAINAGE IN PLANTING AREAS.
- N. ADDITIONAL ROCK EXCAVATION AND TOPSOIL MAY BE REQUIRED TO OBTAIN SPECIFIED PLANTING DEPTHS FOR ROOT COVERAGE BASED ON SITE CONDITIONS.

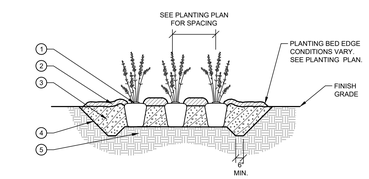


1. SHRUB
2. B&B SHRUB
3. MULCH (SEE NOTES)
4. AMENDED PLANTING SOIL
5. SHRUB PIT
6. UNDISTURBED EXISTING OR RECOMPACTED BASE SOIL; 8" DEPTH
7. CONTAINER SHRUB

NOTES:
- A. B&B: REMOVE TWINE, ROPE, WIRE, & BURLAP FROM TOP 1/3 OF ROOTBALL.TOP OF ROOTBALL TO BE FLUSH WITH FINISH GRADE AFTER SETTLEMENT. ROOT FLARE 1" ABOVE FINISH GRADE.
- B. CONTAINER: LOOSEN ROOT BALL OF ANY ROOT BOUND SHRUB.
- C. SHRUB PIT TO BE THREE TIMES THE WIDTH OF THE ROOTBALL.
- D. SCARIFY BOTTOM AND SIDES OF SHRUB PIT TO 4" MIN. DEPTH.
- E. SEE SPECIFICATIONS FOR ADDITIONAL SOIL INFORMATION.
- F. SUBSOIL AND TOPSOIL REMOVED FROM EXCAVATIONS MAY BE USED AS PLANTING SOIL PROVIDED IT IS FREE OF ROCKS & DELETERIOUS MATERIALS. TOPSOIL AMENDED PER SOIL TESTING REPORT. BACKFILL IN 6" SOIL LIFTS. LIGHTLY COMPACT.
- G. MULCH ENTIRE SHRUB BED (SEE SPECIFICATIONS FOR DEPTH). MINIMUM 36" RADIUS. DO NOT PLACE MULCH WITHIN 3" OF STEMS.

4 SHRUB PLANTING DETAIL

NOT TO SCALE — P-DET-AL25-13

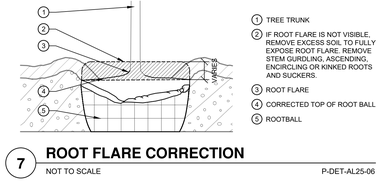


1. ROOTBALL
2. MULCH (SEE NOTES)
3. AMENDED PLANTING SOIL
4. SHRUB PIT
5. UNDISTURBED EXISTING OR RECOMPACTED BASE SOIL; 8" DEPTH

NOTES:
- A. REMOVE CONTAINER FROM ROOTBALL. CUT OR LOOSEN ANY ROOTS AT THE SURFACE.
- B. SET TOP OF ROOT BALL 1 INCH ABOVE FINISH GRADE.
- C. SCARIFY BOTTOM AND SIDES OF PLANTING PIT TO 4" MIN. DEPTH.
- D. SUBSOIL AND TOPSOIL REMOVED FROM EXCAVATIONS MAY BE USED AS PLANTING SOIL PROVIDED IT IS FREE OF ROCKS & DELETERIOUS MATERIALS. TOPSOIL AMENDED PER SOIL TESTING REPORT. BACKFILL IN 6" SOIL LIFTS. LIGHTLY COMPACT.
- E. MULCH ENTIRE SHRUB BED (SEE SPECIFICATIONS FOR DEPTH). MINIMUM 36" RADIUS. DO NOT PLACE MULCH WITHIN 3" OF STEMS.

5 GRASSES & PERENNIALS PLANTING DETAIL

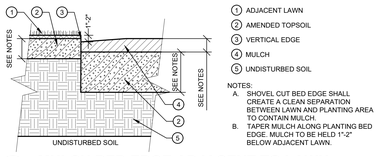
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1. TREE TRUNK
2. IF ROOT FLARE IS NOT VISIBLE, REMOVE EXCESS SOIL TO FULLY EXPOSE ROOT FLARE. REMOVE STEM GURDLING, ASCENDING, ENCIRCLING OR KINKED ROOTS AND SUCKERS.
3. ROOT FLARE
4. CORRECTED TOP OF ROOT BALL
5. ROOTBALL

7 ROOT FLARE CORRECTION

NOT TO SCALE — P-DET-AL25-06



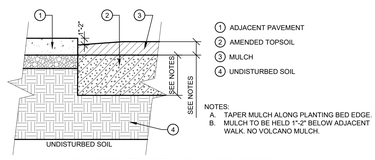
1. ADJACENT LAWN
2. AMENDED TOPSOIL
3. VERTICAL EDGE
4. MULCH
5. UNDISTURBED SOIL

NOTES:
- A. SHOVEL CUT BED EDGE SHALL CREATE A CLEAN SEPARATION BETWEEN LAWN AND PLANTING AREA TO CONTAIN MULCH.
- B. TAPER MULCH ALONG PLANTING BED EDGE. MULCH TO BE HELD 1"-2" BELOW ADJACENT LAWN.

P-DET-AL25-03

7 MULCH BED EDGE ADJACENT TO LAWN

NOT TO SCALE — P-DET-AL25-19

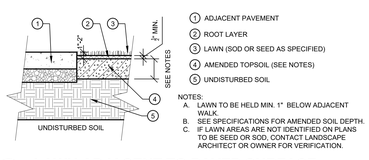


1. ADJACENT PAVEMENT
2. AMENDED TOPSOIL
3. MULCH
4. UNDISTURBED SOIL

NOTES:
- A. TAPER MULCH ALONG PLANTING BED EDGE.
- B. MULCH TO BE HELD 1"-2" BELOW ADJACENT WALK. NO VOLCANO MULCH.

8 MULCH BED EDGE ADJACENT TO WALK

NOT TO SCALE — P-DET-AL25-18

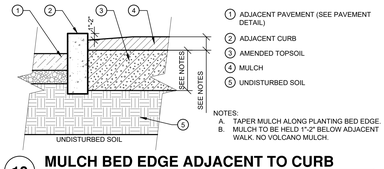


1. ADJACENT PAVEMENT
2. ROOT LAYER
3. LAWN (SOD OR SEED AS SPECIFIED)
4. AMENDED TOPSOIL (SEE NOTES)
5. UNDISTURBED SOIL

NOTES:
- A. LAWN TO BE HELD MIN. 1" BELOW ADJACENT WALK.
- B. SEE SPECIFICATIONS FOR AMENDED SOIL DEPTH.
- C. IF LAWN AREAS ARE NOT IDENTIFIED ON PLANS TO BE SEED OR SOD, CONTACT LANDSCAPE ARCHITECT OR OWNER FOR VERIFICATION.

9 LAWN ADJACENT TO PAVED SURFACE

NOT TO SCALE — P-DET-AL25-23

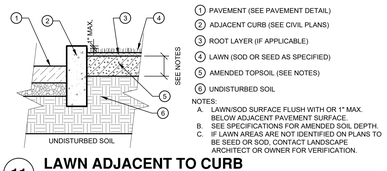


1. ADJACENT PAVEMENT (SEE PAVEMENT DETAIL)
2. ADJACENT CURB
3. AMENDED TOPSOIL
4. MULCH
5. UNDISTURBED SOIL

NOTES:
- A. TAPER MULCH ALONG PLANTING BED EDGE.
- B. MULCH TO BE HELD 1"-2" BELOW ADJACENT WALK. NO VOLCANO MULCH.

10 MULCH BED EDGE ADJACENT TO CURB

NOT TO SCALE — P-DET-AL25-21

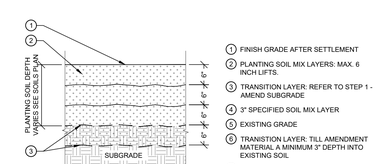


1. PAVEMENT (SEE PAVEMENT DETAIL)
2. ADJACENT CURB (SEE CIVIL PLANS)
3. ROOT LAYER (IF APPLICABLE)
4. LAWN (SOD OR SEED AS SPECIFIED)
5. AMENDED TOPSOIL (SEE NOTES)
6. UNDISTURBED SOIL

NOTES:
- A. LAWN/SOD SURFACE FLUSH WITH OR 1" MAX. BELOW ADJACENT PAVEMENT SURFACE.
- B. SEE SPECIFICATIONS FOR AMENDED SOIL DEPTH.
- C. IF LAWN AREAS ARE NOT IDENTIFIED ON PLANS TO BE SEED OR SOD, CONTACT LANDSCAPE ARCHITECT OR OWNER FOR VERIFICATION.

11 LAWN ADJACENT TO CURB

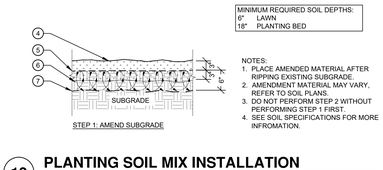
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STEP 2: SOIL INSTALLATION

1. FINISH GRADE AFTER SETTLEMENT
2. PLANTING SOIL MIX LAYERS: MAX. 6 INCH LIFTS.
3. TRANSITION LAYER: REFER TO STEP 1 - AMEND SUBGRADE
4. 3" SPECIFIED SOIL MIX LAYER
5. EXISTING GRADE
6. TRANISTION LAYER: TILL AMENDMENT MATERIAL A MINIMUM 3" DEPTH INTO EXISTING SOIL
7. EXISING SOIL RIPPED TO DPETH AS SPECIFIED

MINIMUM REQUIRED SOIL DEPTHS:
6" LAWN
18" PLANTING BED



STEP 1: AMEND SUBGRADE

NOTES:
1. PLACE AMENDED MATERIAL AFTER RIPPING EXISTING SUBGRADE.
2. AMENDMENT MATERIAL MAY VARY, REFER TO SOIL PLANS.
3. DO NOT PERFORM STEP 2 WITHOUT PERFORMING STEP 1 FIRST.
4. SEE SOIL SPECIFICATIONS FOR MORE INFROMATION.

12 PLANTING SOIL MIX INSTALLATION

3/4" = 1'-0" — P-DET-SOI-02

Plot time: Oct 10, 2025 - 12:49pm
Drawing name: J:\2024\24-0202\LA\DWG\24-0202 PP.DWG - Layout Tab: 2 OF 3 PLANTING DETAILS

Item	Revision Description	Date	Drawn	Chk
	PRELIMINARY			

TALL OAKS
SECTION 36, TOWN 3, RANGE 3
CITY OF MONROE, BUTLER COUNTY, OHIO

PLANTING DETAILS

bayer becker
www.bayerbecker.com
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Drawing: 24-0202 PP
Drawn by: ADH
Checked By: ADH
Issue Date: 9-9-25
Sheet: 2/3

SECTION 32 93 00 - PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.2 SUMMARY
A. SECTION INCLUDES:
1. PLANTS.
2. PLANTING SOILS.
3. MISCELLANEOUS PRODUCTS.

1.3 SUBMITTALS
A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED, INCLUDING SOILS.
1. PLANT MATERIALS: INCLUDE QUANTITIES, SIZES, QUALITY, AND SOURCES FOR PLANT MATERIALS.
2. PESTICIDES AND HERBICIDES: INCLUDE PRODUCT LABEL AND MANUFACTURER'S APPLICATION INSTRUCTIONS SPECIFIC TO THE PROJECT.
B. SAMPLES FOR VERIFICATION: SUBMIT EACH PRODUCT AND MATERIAL WHERE REQUIRED BY THE SPECIFICATIONS TO THE OWNER'S REPRESENTATIVE FOR APPROVAL.
C. PRODUCT CERTIFICATES: FOR EACH TYPE OF MANUFACTURED PRODUCT, FROM MANUFACTURER, AND COMPLYING WITH THE FOLLOWING:
1. MANUFACTURER'S CERTIFIED ANALYSIS OF STANDARD PRODUCTS.
D. MATERIAL TEST REPORTS: FOR STANDARDIZED ASTM D 5268 TOPSOIL, EXISTING NATIVE SURFACE TOPSOIL, AND IMPORTED OR MANUFACTURED TOPSOIL.
E. WARRANTY: SAMPLE OF SPECIAL WARRANTY.

1.4 QUALITY ASSURANCE
A. INSTALLER QUALIFICATIONS: A QUALIFIED LANDSCAPE INSTALLER WHOSE WORK HAS RESULTED IN SUCCESSFUL ESTABLISHMENT OF PLANTS:
1. EXPERIENCE: FIVE YEARS' EXPERIENCE IN LANDSCAPE INSTALLATION IN ADDITION TO REQUIREMENTS IN DIVISION 01 SECTION "QUALITY REQUIREMENTS."
2. INSTALLER'S FIELD SUPERVISION: REQUIRE INSTALLER TO MAINTAIN AN EXPERIENCED FULL-TIME SUPERVISOR ON PROJECT SITE WHEN WORK IS IN PROGRESS.
3. PESTICIDE APPLICATOR: STATE LICENSED, COMMERCIAL.
B. SOIL ANALYSIS: FOR EACH UNAMENDED SOIL TYPE, FURNISH SOIL ANALYSIS AND A WRITTEN REPORT BY A QUALIFIED SOIL-TESTING LABORATORY STATING PERCENTAGES OF ORGANIC MATTER; GRADATION OF SAND, SILT, AND CLAY CONTENT; CATION EXCHANGE CAPACITY; SODIUM ABSORPTION RATIO; DELETERIOUS MATERIAL; PH; AND MINERAL AND PLANT-NUTRIENT CONTENT OF THE SOIL.
1. TESTING METHODS AND WRITTEN RECOMMENDATIONS SHALL COMPLY WITH USDA'S HANDBOOK NO. 60.
2. THE SOIL-TESTING LABORATORY SHALL OVERSEE SOIL SAMPLING; WITH DEPTH, LOCATION, AND NUMBER OF SAMPLES TO BE TAKEN PER INSTRUCTIONS FROM LANDSCAPE LANDSCAPE ARCHITECT. A MINIMUM OF THREE REPRESENTATIVE SAMPLES SHALL BE TAKEN FROM VARIED LOCATIONS FOR EACH SOIL TO BE USED OR AMENDED FOR PLANTING PURPOSES.
3. REPORT SUITABILITY OF TESTED SOIL FOR PLANT GROWTH.
a. BASED UPON THE TEST RESULTS, STATE RECOMMENDATIONS FOR SOIL TREATMENTS AND SOIL AMENDMENTS TO BE INCORPORATED. STATE RECOMMENDATIONS IN WEIGHT PER 1000 SQ. FT. (92.9 SQ. M) OR VOLUME PER CU. YD. (0.76 CU. M) FOR NITROGEN, PHOSPHORUS, AND POTASH NUTRIENTS AND SOIL AMENDMENTS TO BE ADDED TO PRODUCE SATISFACTORY PLANTING SOIL SUITABLE FOR HEALTHY, VIABLE PLANTS.
b. REPORT PRESENCE OF PROBLEM SALTS, MINERALS, OR HEAVY METALS, INCLUDING ALUMINUM, ARSENIC, BARIUM, CADMIUM, CHROMIUM, COBALT, LEAD, LITHIUM, AND VANADIUM. IF SUCH PROBLEM MATERIALS ARE PRESENT, PROVIDE ADDITIONAL RECOMMENDATIONS FOR CORRECTIVE ACTION.
C. PROVIDE QUALITY, SIZE, GENUS, SPECIES, AND VARIETY OF PLANTS INDICATED, COMPLYING WITH APPLICABLE REQUIREMENTS IN ANSI Z60.1. PLANTS WITH HEALTHY ROOT SYSTEMS DEVELOPED BY TRANSPLANTING OR ROOT PRUNING. PROVIDE WELL-SHAPED, FULLY BRANCHED, HEALTHY, VIGOROUS STOCK, FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN SCALD, INJURIES, ABRASIONS, AND DISFIGUREMENT.
a. IF FORMAL ARRANGEMENTS OR CONSECUTIVE ORDER OF TREES OR SHRUBS IS SHOWN, SELECT STOCK FOR UNIFORM HEIGHT AND SPREAD, AND NUMBER LABEL TO ASSURE SYMMETRY IN PLANTING.
D. MEASUREMENTS: MEASURE ACCORDING TO ANSI Z60.1. DO NOT PRUNE TO OBTAIN REQUIRED SIZES.
1. TREES AND SHRUBS: MEASURE WITH BRANCHES AND TOP OR CANES IN THEIR NORMAL POSITION. TAKE HEIGHT MEASUREMENTS FROM OR NEAR THE TOP OF THE ROOT FLARE FOR FIELD-GROWN STOCK AND CONTAINER-GROWN STOCK. MEASURE MAIN BODY OF TREE OR SHRUB FOR HEIGHT AND SPREAD; DO NOT MEASURE BRANCHES OR ROOTS TIP TO TIP. TAKE CALIPER MEASUREMENTS 6 INCHES (150 MM) ABOVE THE ROOT FLARE FOR TREES UP TO 4-INCH (100-MM) CALIPER SIZE, AND 12 INCHES (300 MM) ABOVE THE ROOT FLARE FOR LARGER SIZES.
2. OTHER PLANTS: MEASURE WITH STEMS, PETIOLES, AND FOLIAGE IN THEIR NORMAL POSITION.
E. PLANT MATERIALS AT CONSTRUCTION OBSERVATION: LANDSCAPE ARCHITECT MAY OBSERVE PLANT MATERIAL EITHER AT PLACE OF GROWTH OR AT SITE BEFORE PLANTING FOR COMPLIANCE WITH REQUIREMENTS FOR GENUS, SPECIES, VARIETY, CULTIVAR, SIZE, AND QUALITY. LANDSCAPE ARCHITECT MAY ALSO INSPECT TO OBSERVE TREES AND SHRUBS FURTHER FOR SIZE AND CONDITION OF BALLS AND ROOT SYSTEMS, PESTS, DISEASE SYMPTOMS, INJURIES, AND LATENT DEFECTS AND TO REJECT UNSATISFACTORY OR DEFECTIVE MATERIAL AT ANY TIME DURING PROGRESS OF WORK. REMOVE REJECTED TREES OR SHRUBS IMMEDIATELY FROM PROJECT SITE.

1.5 DELIVERY, STORAGE, AND HANDLING
A. PACKAGED MATERIALS: DELIVER PACKAGED MATERIALS IN ORIGINAL, UNOPENED CONTAINERS SHOWING WEIGHT, CERTIFIED ANALYSIS, NAME AND ADDRESS OF MANUFACTURER, AND INDICATION OF CONFORMANCE WITH STATE AND FEDERAL LAWS IF APPLICABLE.
B. BULK MATERIALS:
1. DO NOT DUMP OR STORE BULK MATERIALS NEAR STRUCTURES, UTILITIES, WALKWAYS AND PAVEMENTS, OR ON EXISTING TURF AREAS OR PLANTS.
2. PROVIDE EROSION-CONTROL MEASURES TO PREVENT EROSION OR DISPLACEMENT OF BULK MATERIALS, DISCHARGE OF SOIL-BEARING WATER RUNOFF, AND AIRBORNE DUST REACHING ADJACENT PROPERTIES, WATER CONVEYANCE SYSTEMS, OR WALKWAYS.
3. ACCOMPANY EACH DELIVERY OF BULK FERTILIZERS, LIME, AND SOIL AMENDMENTS WITH APPROPRIATE CERTIFICATES.
C. DO NOT PRUNE TREES AND SHRUBS BEFORE DELIVERY. PROTECT BARK, BRANCHES, AND ROOT SYSTEMS FROM SUN SCALD, DRYING, WIND BURN, SWEATING, WHIPPING, AND OTHER HANDLING AND TYING DAMAGE. DO NOT BEND OR BIND-TIE TREES OR SHRUBS IN SUCH A MANNER AS TO DESTROY THEIR NATURAL GROWTH HABIT. PROVIDE PROTECTIVE COVERING OF PLANTS DURING SHIPPING AND DELIVERY. DO NOT DROP PLANTS DURING DELIVERY AND HANDLING.
D. HANDLE PLANTING STOCK BY ROOT BALL.
E. STORE BULBS, CORMS, AND TUBERS IN A DRY PLACE AT 60 TO 65 DEG F (16 TO 18 DEG C) UNTIL PLANTING.
F. DELIVER PLANTS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED, AND INSTALL IMMEDIATELY. IF PLANTING IS DELAYED MORE THAN SIX HOURS AFTER DELIVERY, SET PLANTS AND PROTECT WITH APPROPRIATE ASPECT (SUN, FILTERED SUN, OR SHADE). PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST.
1. SET BALLED STOCK ON GROUND AND COVER BALL WITH SOIL, PEAT MOSS, SAWDUST, OR OTHER ACCEPTABLE MATERIAL.
2. DO NOT REMOVE CONTAINER-GROWN STOCK FROM CONTAINERS BEFORE TIME OF PLANTING.
3. WATER ROOT SYSTEMS OF PLANTS STORED ON-SITE DEEPLY AND THOROUGHLY WITH A FINE-MIST SPRAY. WATER AS OFTEN AS NECESSARY TO MAINTAIN ROOT SYSTEMS IN A MOIST, BUT NOT OVERLY-WET CONDITION.

1.6 PROJECT CONDITIONS
A. FIELD MEASUREMENTS: VERIFY ACTUAL GRADE ELEVATIONS, SERVICE AND UTILITY LOCATIONS, IRRIGATION SYSTEM COMPONENTS, AND DIMENSIONS OF PLANTINGS AND CONSTRUCTION CONTIGUOUS WITH NEW PLANTINGS BY FIELD MEASUREMENTS BEFORE PROCEEDING WITH PLANTING WORK.
B. WEATHER LIMITATIONS: PROCEED WITH PLANTING ONLY WHEN EXISTING AND FORECASTED WEATHER CONDITIONS PERMIT PLANTING TO BE PERFORMED WHEN BENEFICIAL AND OPTIMUM RESULTS MAY BE OBTAINED. APPLY PRODUCTS DURING FAVORABLE WEATHER CONDITIONS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AND WARRANTY REQUIREMENTS.
C. COORDINATION WITH TURF AREAS (LAWNS): PLANT TREES, SHRUBS, AND OTHER PLANTS AFTER FINISH GRADES ARE ESTABLISHED AND BEFORE PLANTING TURF AREAS UNLESS OTHERWISE INDICATED.
1. WHEN PLANTING TREES, SHRUBS, AND OTHER PLANTS AFTER PLANTING TURF AREAS, PROTECT TURF AREAS, AND PROMPTLY REPAIR DAMAGE CAUSED BY PLANTING OPERATIONS.

1.7 WARRANTY
A. SPECIAL WARRANTY: INSTALLER AGREES TO REPAIR OR REPLACE PLANTINGS AND ACCESSORIES THAT FAIL IN MATERIALS, WORKMANSHIP, OR GROWTH WITHIN SPECIFIED WARRANTY PERIOD.
1. FAILURES INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
a. DEATH & UNSATISFACTORY GROWTH, EXCEPT FOR DEFECTS RESULTING FROM ABUSE, LACK OF ADEQUATE MAINTENANCE, OR NEGLECT BY OWNER, OR PARTIES OTHER THAT ARE BEYOND CONTRACTOR'S CONTROL.
b. STRUCTURAL FAILURES INCLUDING PLANTINGS FALLING OR BLOWING OVER.
c. FAULTY PERFORMANCE OF TREE STABILIZATION, EDGINGS.
d. DETERIORATION OF METALS, METAL FINISHES, AND OTHER MATERIALS BEYOND NORMAL WEATHERING.
2. WARRANTY PERIODS FROM DATE OF PLANTING COMPLETION.
a. TREES, SHRUBS, VINES, AND ORNAMENTAL GRASSES: 12 MONTHS.
b. GROUND COVERS, BIENNIALS, PERENNIALS, AND OTHER PLANTS: 12 MONTHS.
3. INCLUDE THE FOLLOWING REMEDIAL ACTIONS AS A MINIMUM:
a. IMMEDIATELY REMOVE DEAD PLANTS AND REPLACE UNLESS REQUIRED TO PLANT IN THE SUCCEEDING PLANTING SEASON.
b. REPLACE PLANTS THAT ARE MORE THAN 25 PERCENT DEAD OR IN AN UNHEALTHY CONDITION AT END OF WARRANTY PERIOD.
c. A LIMIT OF ONE REPLACEMENT OF EACH PLANT WILL BE REQUIRED EXCEPT FOR LOSSES OR REPLACEMENTS DUE TO FAILURE TO COMPLY WITH REQUIREMENTS.
d. PROVIDE EXTENDED WARRANTY FOR PERIOD EQUAL TO ORIGINAL WARRANTY PERIOD, FOR REPLACED PLANT MATERIALS.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL
A. GENERAL: FURNISH NURSERY-GROWN PLANTS TRUE TO GENUS, SPECIES, VARIETY, CULTIVAR, STEM FORM, SHEARING, AND OTHER FEATURES INDICATED IN PLANT SCHEDULE OF PLANT LEGEND SHOWN ON DRAWINGS AND COMPLYING WITH ANSI Z60.1; AND WITH HEALTHY ROOT SYSTEMS DEVELOPED BY TRANSPLANTING OR ROOT PRUNING. PROVIDE WELL-SHAPED, FULLY BRANCHED, HEALTHY, VIGOROUS STOCK, DENSELY FOLIATED WHEN IN LEAF AND FREE OF DISEASE, PESTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SUN SCALD, INJURIES, ABRASIONS, AND DISFIGUREMENT.
1. TREES WITH DAMAGED, CROOKED, OR MULTIPLE LEADERS; TIGHT VERTICAL BRANCHES WHERE BARK IS SQUEEZED BETWEEN TWO BRANCHES OR BETWEEN BRANCH AND TRUNK ("INCLUDED BARK"); CROSSING TRUNKS; CUT-OFF LIMBS MORE THAN 3/4 INCH (19 MM) IN DIAMETER; OR WITH STEM GIRDLING ROOTS WILL BE REJECTED.
2. COLLECTED STOCK: DO NOT USE PLANTS HARVESTED FROM THE WILD, FROM NATIVE STANDS, FROM AN ESTABLISHED LANDSCAPE PLANTING, OR NOT GROWN IN A NURSERY UNLESS OTHERWISE INDICATED.
B. PROVIDE PLANTS OF SIZES, GRADES, AND BALL OR CONTAINER SIZES COMPLYING WITH ANSI Z60.1 FOR TYPES AND FORM OF PLANTS REQUIRED. PLANTS OF A LARGER SIZE MAY BE USED IF ACCEPTABLE TO LANDSCAPE ARCHITECT, WITH A PROPORTIONATE INCREASE IN SIZE OF ROOTS OR BALLS.
C. ROOT-BALL DEPTH: FURNISH TREES AND SHRUBS WITH ROOT BALLS MEASURED FROM TOP OF ROOT BALL, WHICH SHALL BEGIN AT ROOT FLARE ACCORDING TO ANSI Z60.1. ROOT FLARE SHALL BE VISIBLE BEFORE PLANTING.
D. LABELING: LABEL AT LEAST ONE PLANT OF EACH VARIETY, SIZE, AND CALIPER WITH A SECURELY ATTACHED, WATERPROOF TAG BEARING LEGIBLE DESIGNATION OF COMMON NAME AND FULL SCIENTIFIC NAME, INCLUDING GENUS AND SPECIES. INCLUDE NOMENCLATURE FOR HYBRID, VARIETY, OR CULTIVAR, IF APPLICABLE FOR THE PLANT AS SHOWN ON DRAWINGS. PLANT TAGS SHALL REMAIN ON INSTALLED PLANT MATERIAL UNTIL THE WORK HAS BEEN APPROVED BY LOCAL INSPECTOR AND/OR THE OWNER OR OWNER'S REPRESENTATIVE.

2.2 INORGANIC SOIL AMENDMENTS
A. LIME: ASTM C 602, AGRICULTURAL LIMING MATERIAL CONTAINING A MINIMUM OF 80 PERCENT CALCIUM CARBONATE EQUIVALENT AND AS FOLLOWS:
1. PROVIDE LIME IN FORM OF GROUND DOLOMITIC LIMESTONE PER ASTM 605, CONTAINING NOT LESS THAN 85% OF TOTAL CARBONATES AND SHALL BE GROUND TO SUCH A FINENESS THAT 50% WILL PASS THROUGH A 100 MESH SIEVE AND 90% WILL PASS THROUGH A 20 MESH SIEVE. COARSER MATERIAL WILL BE ACCEPTABLE, PROVIDED THE SPECIFIED RATES OF APPLICATION ARE INCREASED PROPORTIONALLY ON THE BASIS OF QUANTITIES PASSING THE 100 MESH SIEVE.
B. SULFUR: GRANULAR, BIODEGRADABLE, AND CONTAINING A MINIMUM OF 90 PERCENT SULFUR, WITH A MINIMUM OF 99 PERCENT PASSING THROUGH NO. 6 (3.35-MM) SIEVE AND A MAXIMUM OF 10 PERCENT PASSING THROUGH NO. 40 (0.425-MM) SIEVE.

2.3 MULCHES
A. ORGANIC MULCH: FREE FROM DELETERIOUS MATERIALS AND SUITABLE AS A TOP DRESSING OF TREES AND SHRUBS, CONSISTING OF ONE OF THE FOLLOWING:
1. TYPE: DOUBLE SHREDDED HARDWOOD BARK.

2.4 MISCELLANEOUS PRODUCTS
A. ANTIDESICCANT: WATER-INSOLUBLE EMULSION, PERMEABLE MOISTURE RETARDER, FILM FORMING, FOR TREES AND SHRUBS. DELIVER IN ORIGINAL, SEALED, AND FULLY LABELED CONTAINERS AND MIX ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
B. TREE-WRAP TAPE: TWO LAYERS OF CRINKLED PAPER CEMENTED TOGETHER WITH BITUMINOUS MATERIAL, 4" WIDE MINIMUM, WITH STRETCH FACTOR 33 PERCENT.
C. PRE-EMERGENT HERBICIDE: TO KILL GENERATING WEED SEEDLUNGS, APPLY ONE OF THE FOLLOWING PRE-EMERGENT HERBICIDES AS MANUFACTURER'S RECOMMENDED RATE:
1. ORYZALIN (SURFLAN).
2. SIMAZIN (PRINCEP).
3. TRIFLURALIN (TREFLAN).
D. POST-EMERGENT HERMICIDE: TO KILL EMERGENT WEEDS DURING MAINTENANCE PERIOD, APPLY ONE OF THE FOLLOWING POST-EMERGENT HERBICIDES AT MANUFACTURER'S RECOMMENDED RATE;
1. SETHOXYDIM (POAST)
2. FLUAZIFOP (FUSILADE)

PART 3 - EXECUTION

3.1 EXAMINATION
A. EXAMINE AREAS TO RECEIVE PLANTS FOR COMPLIANCE WITH REQUIREMENTS AND CONDITIONS AFFECTING INSTALLATION AND PERFORMANCE:
1. VERIFY THAT NO FOREIGN OR DELETERIOUS MATERIAL OR LIQUID SUCH AS PAINT, PAINT WASHOUT, CONCRETE SLURRY, CONCRETE WASHOUT, CHUNKS, CEMENT, PLASTER, OILS, GASOLINE, DIESEL FUEL, PAINT THINNER, TURPENTINE, TAR, ROOFING COMPOUND, OR ACID HAS BEEN DEPOSITED IN SOIL WITHIN A PLANTING AREA.
2. DO NOT MIX OR PLACE SOILS AND SOIL AMENDMENTS IN FROZEN, WET, OR MUDDY CONDITIONS.
3. SUSPEND SOIL SPREADING, GRADING, AND TILLING OPERATIONS DURING PERIODS OF EXCESSIVE SOIL MOISTURE UNTIL THE MOISTURE CONTENT REACHES ACCEPTABLE LEVELS TO ATTAIN THE REQUIRED RESULTS.
4. UNIFORMLY MOISTEN EXCESSIVELY DRY SOIL THAT IS NOT WORKABLE AND WHICH IS TOO DUSTY.
B. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
C. IF CONDITIONS HARMFUL TO PLANT GROWTH OR LIQUID IS PRESENT IN SOIL WITHIN A PLANTING AREA, REMOVE THE SOIL AND CONTAMINATION AS DIRECTED BY LANDSCAPE ARCHITECT AND REPLACE WITH NEW PLANTING SOIL.

3.2 PREPARATION
A. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, AND OTHER FACILITIES AND TURF AREAS AND EXISTING PLANTS FROM DAMAGE CAUSED BY PLANTING OPERATIONS.
B. INSTALL EROSION-CONTROL MEASURES TO PREVENT EROSION OR DISPLACEMENT OF SOILS AND DISCHARGE OF SOIL-BEARING WATER RUNOFF OR AIRBORNE DUST TO ADJACENT PROPERTIES AND WALKWAYS.
C. LAY OUT INDIVIDUAL TREE AND SHRUB LOCATIONS AND AREAS FOR MULTIPLE PLANTINGS. STAKE LOCATIONS, OUTLINE AREAS, ADJUST LOCATIONS WHEN REQUESTED, AND OBTAIN LANDSCAPE ARCHITECT'S ACCEPTANCE OF LAYOUT BEFORE EXCAVATING OR PLANTING. MAKE MINOR ADJUSTMENTS AS REQUIRED.
D. LAY OUT PLANTS AT LOCATIONS DIRECTED BY LANDSCAPE ARCHITECT. STAKE LOCATIONS OF INDIVIDUAL TREES AND SHRUBS AND OUTLINE AREAS FOR MULTIPLE PLANTINGS.
E. IF EXISTING SOIL CONDITIONS OR LANDSCAPE PLANS TO FIT THE SITE CONDITIONS, A STAKE OUT BY LANDSCAPE CONTRACTOR AND ADJUSTMENTS BY LANDSCAPE ARCHITECT SHALL BE REQUIRED PRIOR TO INSTALLATION.
F. APPLY ANTIDESICCANT TO TREES AND SHRUBS USING POWER SPRAY TO PROVIDE AN ADEQUATE FILM OVER TRUNKS (BEFORE WRAPPING), BRANCHES, STEMS, TWIGS, AND FOLIAGE TO PROTECT DURING DIGGING, HANDLING, AND TRANSPORTATION.
1. IF DECIDUOUS TREES OR SHRUBS ARE MOVED IN FULL LEAF, SPRAY WITH ANTIDESICCANT AT NURSERY BEFORE MOVING AND AGAIN TWO WEEKS AFTER PLANTING.
G. WRAP TREES AND SHRUBS WITH BURLAP FABRIC OVER TRUNKS, BRANCHES, STEMS, TWIGS, AND FOLIAGE TO PROTECT FROM WIND AND OTHER DAMAGE DURING DIGGING, HANDLING, AND TRANSPORTATION.

3.3 PLANTING AREA ESTABLISHMENT
A. LOOSEN SUBGRADE OF PLANTING AREAS TO A MINIMUM DEPTH OF 18 INCHES (450 MM). REMOVE STONES LARGER THAN 1 INCH (25 MM) IN ANY DIMENSION AND STICKS, ROOTS, RUBBISH, AND OTHER EXTRANEOUS MATTER AND LEGALLY DISPOSE OF THEM OFF OWNER'S PROPERTY.
1. APPLY FERTILIZER DIRECTLY TO SUBGRADE BEFORE LOOSENING.
2. SPREAD TOPSOIL, APPLY SOIL AMENDMENTS AND FERTILIZER ON SURFACE, AND THOROUGHLY BLEND PLANTING SOIL.
a. DELAY MIXING FERTILIZER WITH PLANTING SOIL IF PLANTING WILL NOT PROCEED WITHIN A FEW DAYS.
b. MIX LIME WITH DRY SOILS BEFORE MIXING FERTILIZER.
3. SPREAD PLANTING SOIL TO A DEPTH OF 18 INCHES (450 MM) BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT. DO NOT SPREAD IF PLANTING SOIL OR SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET.
B. FINISH GRADING: GRADE PLANTING AREAS TO A SMOOTH, UNIFORM SURFACE PLANE WITH LOOSE, UNIFORMLY FINE TEXTURE. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES.
C. RESTORE PLANTING AREAS IF ERODED OR OTHERWISE DISTURBED AFTER FINISH GRADING.
D. ALL PLANTING AREAS SHOWN ON PLANS SHALL BE WITHIN 2" OF FINAL GRADE BEFORE LANDSCAPE CONTRACTOR COMMENCES INSTALLATION.

3.4 EXCAVATION FOR TREES AND SHRUBS
A. PLANTING PITS AND TRENCHES: EXCAVATE CIRCULAR PLANTING PITS WITH SIDES SLOPING INWARD AT A 45-DEGREE ANGLE. EXCAVATIONS WITH VERTICAL SIDES ARE NOT ACCEPTABLE. TRIM PERIMETER OF BOTTOM LEAVING CENTER AREA OF BOTTOM RAISED 8 INCHES TO SUPPORT ROOT BALL AND ASSIST IN DRAINAGE AWAY FROM CENTER. DO NOT FURTHER DISTURB BASE. ENSURE THAT ROOT BALL WILL SIT ON UNDISTURBED BASE SOIL TO PREVENT SETTLING. SCARIFY SIDES OF PLANTING PIT SMEARED OR SMOOTHED DURING EXCAVATION.
1. EXCAVATE APPROXIMATELY THREE TIMES AS WIDE AS BALL DIAMETER FOR BALLED AND BURLAPPED STOCK.
2. EXCAVATE AT LEAST 12 INCHES (300 MM) WIDER THAN ROOT SPREAD AND DEEP ENOUGH TO ACCOMMODATE VERTICAL ROOTS FOR BARE-ROOT STOCK.
3. IF DRAIN TILE IS SHOWN ON DRAWINGS OR REQUIRED UNDER PLANTING AREAS, EXCAVATE TO TOP OF POROUS BACKFILL OVER TILE.
B. SUBSOIL AND TOPSOIL REMOVED FROM EXCAVATIONS MAY BE USED AS PLANTING SOIL PROVIDED IT IS FREE OF ROCKS OR OTHER DELETERIOUS MATERIALS.
C. OBSTRUCTIONS: NOTIFY LANDSCAPE ARCHITECT IF UNEXPECTED ROCK OR OBSTRUCTIONS DETRIMENTAL TO TREES OR SHRUBS ARE ENCOUNTERED IN EXCAVATIONS.
D. DRAINAGE: NOTIFY LANDSCAPE ARCHITECT IF SUBSOIL CONDITIONS EVIDENCE UNEXPECTED WATER SEEPAGE OR RETENTION IN TREE OR SHRUB PLANTING PITS.
E. FILL EXCAVATIONS WITH WATER AND ALLOW TO PERCOLATE AWAY BEFORE POSITIONING TREES AND SHRUBS.

3.5 TREE, SHRUB, AND VINE PLANTING
A. BEFORE PLANTING, VERIFY THAT ROOT FLARE IS VISIBLE AT TOP OF ROOT BALL ACCORDING TO ANSI Z60.1. IF ROOT FLARE IS NOT VISIBLE, REMOVE SOIL IN A LEVEL MANNER FROM THE ROOT BALL TO WHERE THE TOP-MOST ROOT EMERGES FROM THE TRUNK. AFTER SOIL REMOVAL TO EXPOSE THE ROOT FLARE, VERIFY THAT ROOT BALL STILL MEETS SIZE REQUIREMENTS.
B. REMOVE STEM GIRDLING ROOTS AND KINKED ROOTS. REMOVE INJURED ROOTS BY CUTTING CLEANLY; DO NOT BREAK.
C. SET BALLED AND BURLAPPED STOCK PLUMB AND IN CENTER OF PLANTING PIT OR TRENCH WITH ROOT FLARE 1 INCH (25 MM) ABOVE ADJACENT FINISH GRADES.
D. SET CONTAINER-GROWN STOCK PLUMB AND IN CENTER OF PLANTING PIT OR TRENCH WITH ROOT FLARE 1 INCH (25 MM) ABOVE ADJACENT FINISH GRADES.
1. CAREFULLY REMOVE ROOT BALL FROM CONTAINER WITHOUT DAMAGING ROOT BALL OR PLANT.
2. PLACE PLANTING SOIL MIX AROUND ROOT BALL IN LAYERS, TAMPING TO SETTLE MIX AND ELIMINATE VOICE AND AIR POCKETS. WHEN PIT IS APPROXIMATELY ONE-HALF BACKFILLED, WATER THOROUGHLY BEFORE PLACING REMAINDER OF BACKFILL. REPEAT WATERING UNTIL NO MORE WATER IS ABSORBED. WATER AGAIN AFTER PLACEMENT AND TAMPING FINAL LAYER OF PLANTING SOIL MIX.
E. AFTER THE LANDSCAPE ARCHITECT HAS EXAMINED THE TRUNKS OF NEW INSTALLED TREES, WRAP TREES OF 2-INCH CALIPER AND LARGER WITH TREE-WRAP TAPE. START AT THE BASE OF THE TRUNK AND SPIRAL COVER THE TRUNK TO THE HEIGHT OF THE FIRST BRANCHES. OVERLAP THE WRAP, EXPOSING HALF THE WIDTH, AND SECURELY ATTACH WITHOUT CAUSING GIRDLING. INSPECT TREE TRUNKS FOR INJURY, IMPROPER PRUNING, AND INSECT INFESTATION; TAKE CORRECTIVE MEASURES REQUIRED BEFORE TREE WRAPPING.

3.6 TREE, SHRUB, AND VINE PRUNING
A. REMOVE ONLY DEAD, DYING, OR BROKEN BRANCHES. DO NOT PRUNE FOR SHAPE.
B. PRUNE, THIN, AND SHAPE TREES, SHRUBS, AND VINES AS DIRECTED BY LANDSCAPE ARCHITECT.
C. PRUNE, THIN, AND SHAPE TREES, SHRUBS, AND VINES ACCORDING TO STANDARD PROFESSIONAL HORTICULTURAL AND ARBORICULTURAL PRACTICES. UNLESS OTHERWISE INDICATED BY LANDSCAPE ARCHITECT, DO NOT CUT TREE LEADERS; REMOVE ONLY INJURED, DYING, OR DEAD BRANCHES FROM TREES AND SHRUBS; AND PRUNE TO RETAIN NATURAL CHARACTER.
D. DO NOT APPLY PRUNING PAINT TO WOUNDS.

3.7 GROUND COVER AND PLANT PLANTING
A. SET OUT AND SPACE GROUND COVER AND PLANTS OTHER THAN TREES, SHRUBS, AND VINES AS INDICATED IN EVEN ROWS WITH TRIANGULAR SPACING.
B. DIG HOLES LARGE ENOUGH TO ALLOW SPREADING OF ROOTS.
C. WORK SOIL AROUND ROOTS TO ELIMINATE AIR POCKETS AND LEAVE A SLIGHT SAUCER INDENTATION AROUND PLANTS TO HOLD WATER.
D. WATER THOROUGHLY AFTER PLANTING, TAKING CARE NOT TO COVER PLANT CROWNS WITH WET SOIL.
E. PROTECT PLANTS FROM HOT SUN AND WIND; REMOVE PROTECTION IF PLANTS SHOW EVIDENCE OF RECOVERY FROM TRANSPLANTING SHOCK.

3.8 PLANTING AREA MULCHING
A. INSTALL WEED-CONTROL BARRIERS BEFORE MULCHING ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS. COMPLETELY COVER AREA TO BE MULCHED, OVERLAPPING EDGES A MINIMUM OF 6 INCHES (150 MM) AND SECURE SEAMS WITH GALVANIZED PINS. PINS TO BE 8"-10" APART ALONG EDGES AND 12" MINIMUM IN CENTER.
B. MULCH BACKFILLED SURFACES OF PLANTING AREAS AND OTHER AREAS INDICATED.
1. TREES AND TREE-LIKE SHRUBS IN TURF AREAS: APPLY ORGANIC MULCH RING OF 4-INCH (75-MM)I AVERAGE THICKNESS, WITH 36-INCH (900-MM) RADIUS AROUND TRUNKS OR STEMS. DO NOT PLACE MULCH WITHIN 3 INCHES (75 MM) OF TRUNKS OR STEMS OR VOLCANO MULCH.
2. ORGANIC MULCH IN PLANTING AREAS: APPLY 2-INCH (50-MM) AVERAGE THICKNESS OF ORGANIC MULCH EXTENDING 12 INCHES (300 MM) BEYOND EDGE OF INDIVIDUAL PLANTING PIT OR TRENCH AND OVER WHOLE SURFACE OF PLANTING AREA, AND FINISH LEVEL WITH ADJACENT FINISH GRADES. DO NOT PLACE MULCH WITHIN 3 INCHES (75 MM) OF TRUNKS OR STEMS.

3.9 PLANT MAINTENANCE
A. MAINTAIN PLANTINGS BY PRUNING, CULTIVATING, WATERING, WEEDING, FERTILIZING, MULCHING, RESTORING PLANTING SAUCERS, ADJUSTING AND REPAIRING TREE-STABILIZATION DEVICES, RESETTING TO PROPER GRADES OR VERTICAL POSITION, AND PERFORMING OTHER OPERATIONS AS REQUIRED TO ESTABLISH HEALTHY, VIABLE PLANTINGS. SPRAY OR TREAT AS REQUIRED TO KEEP TREES AND SHRUBS FREE OF INSECTS AND DISEASE.
a. WATER EXISTING PROTECTED TREES AND VEGETATION WITH ONE INCH OF RAIN (RAIN GAUGE OR NOAH LOCAL WEATHER VERIFIED) PER WEEK FOR DURATION OF CONSTRUCTION PROJECT.
B. FILL IN AS NECESSARY SOIL SUBSIDENCE THAT MAY OCCUR BECAUSE OF SETTLING OR OTHER PROCESSES. REPLACE MULCH MATERIALS DAMAGED OR LOST IN AREAS OF SUBSIDENCE.
C. APPLY Y TREATMENTS AS REQUIRED TO KEEP PLANT MATERIALS, PLANTED AREAS, AND SOILS FREE OF PESTS AND PATHOGENS OR DISEASE. USE INTEGRATED PAST MANAGEMENT PRACTICES WHENEVER POSSIBLE TO MINIMIZE THE USE OF PESTICIDES AND REDUCE HAZARDS. TREATMENTS INCLUDE PHYSICAL CONTROLS SUCH AS HOSING OFF FOLIAGE, MECHANICAL CONTROLS SUCH AS TRAPS, AND BIOLOGICAL CONTROL AGENTS.

3.10 PESTICIDE APPLICATION
A. APPLY PESTICIDES AND OTHER CHEMICAL PRODUCTS AND BIOLOGICAL CONTROL AGENTS IN ACCORDANCE WITH AUTHORITIES HAVING JURISDICTION AND MANUFACTURER'S WRITTEN RECOMMENDATIONS. COORDINATE APPLICATIONS WITH OWNER'S OPERATIONS AND OTHERS IN PROXIMITY TO THE WORK. NOTIFY OWNER BEFORE EACH APPLICATION IS PERFORMED.
B. PRE-EMERGENT HERBICIDES (SELECTIVE AND NON-SELECTIVE): APPLY TO TREE, SHRUB, AND GROUND-COVER AREAS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS. DO NOT APPLY TO SEEDED AREAS.
C. POST-EMERGENT HERBICIDES (SELECTIVE AND NON-SELECTIVE): APPLY ONLY AS NECESSARY TO TREAT ALREADY-GERMINATED WEEDS AND IN ACCORDANCE WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS.

3.11 CLEANUP AND PROTECTION
A. DURING PLANTING, KEEP ADJACENT PAVING AND C

TALL OAKS

Preliminary Stormwater Management Plan

CITY OF MONROE, BUTLER COUNTY, OHIO

SEPTEMBER 8TH , 2025

REVISED OCTOBER 13TH,2025

PREPARED BY:

BAYER BECKER

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MASON, OHIO 45040

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PRELIMINARY STORM WATER MANAGEMENT

Tall Oaks

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September 8, 2025

Revised: October 13, 2025

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Site-Description

Tall Oaks

September 8, 2025

Revised October 13, 2025

Tall Oaks is an attached single-family residential development located in the City of Monroe, Butler County, Ohio. The site is located north of Apple Knoll Lane and west of Hamilton Middletown Road. Construction includes installation of approximately 8,390 LF of roadway and utilities and creation of 226 attached single family home lots. The site consists of 114.29 acres±, approximately 84.56 acres will be impacted by construction activity. The site contains portions of native regions that contain woods and brush areas. The existing site contains 2.0% impervious coverage. Upon completion of construction (including home construction) the site will be comprised of approximately 23% impervious coverage.

The determination of the critical storm event was based on a comparative analysis of the 1-year, 24-hour peak storm runoff discharge under pre-development and post-development conditions. This comparison utilized curve numbers corresponding to each condition, as outlined in the Code of Ordinances dated July 19, 2018.

Once the curve numbers were established, runoff volumes were calculated for each basin under both scenarios. The percentage increase in runoff volume was then assessed using the ordinance-provided thresholds, which define the critical storm event as follows:

If the Percentage of Increase in Volume of Runoff is:		The Critical Storm Will Be:
Equal to or Greater Than:	and Less Than:	
-	10	1 Year
10	20	2 Year
20	50	5 Year
50	100	10 Year
100	250	25 Year
250	500	50 Year
500	-	100 Year

Based on this evaluation, the critical storm designation for each basin is as follows:
Basin 1: 25 Year
Basin 2: 25 Year
Basin 3: 10 Year
Basin 4: 10 Year

As per the NRCS Web Soil Survey, soils within the development area are a mix of hydrologic soil groups B, C and D. More details regarding the soil types on the site are listed on the Post-Developed and Soils Map on Page 25.

The site discharges to the Great Miami River. All water resources within the site area are shown on the Post-Developed and Soils Map on Page 25.

The project has been designed in accordance with the Ohio EPA General Permit Authorization for Stormwater Discharges Associated with Construction Activity under the National Pollutant Discharge Elimination System. Additionally, the site has been designed in accordance with the stormwater requirements of the City of Monroe.

SUMMARY OF DATA - OVERALL

Method of Hydrograph Development: TR-55

Software: Hydraflow

Design Criteria: Reduce the post-developed on-site discharge rate of all storms of greater frequency than the critical storm to be less than or equal to the flowrate generated by a 1 year frequency-24hr duration storm in the pre-developed condition. For all storm events less frequent than the critical storm, on-site flow rate reduced to pre-developed flow of the same frequency (i.e. Post-100yr to Pre-100yr). Off-site tributary flow rates have been added to on-site allowable release rates for each storm frequency.

Pre-Developed Drainage Areas	**Drainage Area** (Acres)	**CN**	**Tc** (Hours)
On-Site Pre-Developed to Basin 1	40.22	62.0	0.37
Off-Site Pre-Developed to Basin 1	24.45	81.4	0.39
Total to Basin 1	64.67	69.3	
On-Site Pre-Developed to Basin 2	24.31	70.5	0.24
Total to Basin 2	24.31	70.5	
On-Site Pre-Developed to Basin 3	16.16	75.4	0.25
Total to Basin 3	16.16	75.4	
On-Site Pre-Developed to Basin 4	8.14	74.7	0.25
Total to Basin 4	8.14	74.7	

Post-Developed Drainage Areas	**Drainage Area** (Acres)	**CN**	**Tc** (Hours)
On-Site Post-Developed to Basin 1	39.75	75.7	0.23
Off-Site Post-Developed to Basin 1	24.45	81.4	0.33
Total to Basin 1	64.20	77.9	
On-Site Post-Developed to Basin 2	23.89	81.5	0.17
Total to Basin 2	23.89	81.5	
On-Site Post-Developed to Basin 3	15.17	85.0	0.17
Total to Basin 3	15.17	85.0	
On-Site Post-Developed to Basin 4	10.03	81.5	0.17
Total to Basin 4	10.03	81.5	

SUMMARY OF DATA - OVERALL

Method of Hydrograph Development: TR-55

Software: Hydraflow

Design Criteria: Reduce the post-developed on-site discharge rate of all storms of greater frequency than the critical storm to be less than or equal to the flowrate generated by a 1 year frequency-24hr duration storm in the pre-developed condition. For all storm events less frequent than the critical storm, on-site flow rate reduced to pre-developed flow of the same frequency (i.e. Post-100yr to Pre-100yr). Off-site tributary flow rates have been added to on-site allowable release rates for each storm frequency.

Basin 1 Allowable Release Rate

Storm Frequency	Allowable Release Rate *	Proposed Release Rate	Difference	
(yr)	(cfs)	(cfs)	(cfs)	
1	18.40	7.43	**-10.97**	
2	30.83	18.38	**-12.45**	
5	44.28	33.14	**-11.14**	
10	55.43	46.24	**-9.19**	
25	69.96	65.28	**-4.68**	Critical Stm
50	138.65	84.05	**-54.60**	
100	162.25	114.17	**-48.08**	

*includes addition off offsite tributary area

Basin 2 Allowable Release Rate

Storm Frequency	Allowable Release Rate	Proposed Release Rate	Difference	
(yr)	(cfs)	(cfs)	(cfs)	
1	7.47	1.03	**-6.44**	
2	7.47	2.23	**-5.24**	
5	7.47	3.80	**-3.67**	
10	7.47	5.27	**-2.20**	
25	7.47	7.34	**-0.13**	Critical Stm
50	67.64	9.99	**-57.65**	
100	79.07	17.39	**-61.68**	

Basin 3 Allowable Release Rate

Storm Frequency	Allowable Release Rate	Proposed Release Rate	Difference	
(yr)	(cfs)	(cfs)	(cfs)	
1	11.00	4.95	**-6.05**	
2	11.00	7.04	**-3.96**	
5	11.00	8.66	**-2.34**	
10	11.00	9.75	**-1.25**	Critical Stm
25	52.03	22.93	**-29.10**	
50	58.07	30.58	**-27.49**	
100	66.27	41.65	**-24.62**	

Basin 4 Allowable Release Rate

Storm Frequency	Allowable Release Rate	Proposed Release Rate	Difference	
(yr)	(cfs)	(cfs)	(cfs)	
1	4.21	0.62	**-3.59**	
2	4.21	1.37	**-2.84**	
5	4.21	2.41	**-1.80**	
10	4.21	3.32	**-0.89**	Critical Stm
25	23.59	10.12	**-13.47**	
50	26.54	15.14	**-11.40**	
100	30.57	22.28	**-8.29**	

SUMMARY OF DATA - BASIN DETAILS

Method of Hydrograph Development: TR-55

Software: Hydraflow

Design Criteria: Reduce the post-developed on-site discharge rate of all storms of greater frequency than the critical storm to be less than or equal to the flowrate generated by a 1 year frequency-24hr duration storm in the pre-developed condition. For all storm events less frequent than the critical storm, on-site flow rate reduced to pre-developed flow of the same frequency (i.e. Post-100yr to Pre-100yr). Off-site tributary flow rates have been added to on-site allowable release rates for each storm frequency.

Basin 1

Wet Extended Basin NWL = 631.00 Spillway = 636.00 T/Dike = 638.00	Outlets: Outlet: (3) 6'-0" Windows @ Elev. = 635.30 Outlet: (1) 3'-0" Windows @ Elev. = 631.90 Outlet: 54" Pipe @ Elev. = 626.00 WQv = 1.006 ac-ft. @ Elev. = 631.85 WQv Orifice: 6-1/8" Orifice @ Elev. = 631.00

Frequency	Inflow	Outflow	Storage		Elevation
(yr)	(cfs)	(cfs)	(ft^3)	(ac-ft)	(ft)
1	43.10	7.43	92,793	2.13	632.72
2	80.09	18.38	134,411	3.09	633.40
5	121.09	33.14	181,223	4.16	634.12
10	155.10	46.24	219,988	5.05	634.68
25	199.86	65.28	269,927	6.20	635.36
50	222.68	84.05	291,458	6.69	635.64
100	253.66	114.17	316,313	7.26	635.96

Spillway	
Design Discharge (cfs)**	253.66
Spillway Invert	636.00
Spillway Length	100.00
Top of Dike Elevation	638.00
Flow Depth (ft) [C=2.6]	0.98
Freeboard	1.02
Spillway Side Slope	4:1
Velocity	2.58

**Pre-Developed Off-Site plus Post Developed On-Site 100yr Discharge

Basin 2

Wet Extended Basin NWL = 633.00 Spillway = 637.00 T/Dike = 639.00	Outlets: Outlet: (3) 4'-0" Windows @ Elev. = 636.40 Outlet: (1) 0'-6" Windows @ Elev. = 633.60 Outlet: 36" Pipe @ Elev. = 629.00 WQv = 0.579 ac-ft. @ Elev. = 633.56 WQv Orifice: 5-5/8" Orifice @ Elev. = 633.00

Frequency	Inflow	Outflow	Storage		Elevation
(yr)	(cfs)	(cfs)	(ft^3)	(ac-ft)	(ft)
1	25.58	1.03	61,510	1.41	634.32
2	43.43	2.23	85,991	1.97	634.81
5	63.01	3.80	113,406	2.60	635.33
10	78.97	5.27	136,344	3.13	635.76
25	99.72	7.34	166,705	3.83	636.29
50	110.20	9.99	180,381	4.14	636.52
100	124.36	17.39	193,712	4.45	636.74

Spillway	
Design Discharge (cfs)**	124.36
Spillway Invert	637.00
Spillway Length	50.00
Top of Dike Elevation	639.00
Flow Depth (ft) [C=2.6]	0.97
Freeboard	1.03
Spillway Side Slope	4:1
Velocity	2.56

**Post-Developed 100yr Discharge

SUMMARY OF DATA - BASIN DETAILS

Method of Hydrograph Development: TR-55

Software: Hydraflow

Design Criteria: Reduce the post-developed on-site discharge rate of all storms of greater frequency than the critical storm to be less than or equal to the flowrate generated by a 1 year frequency-24hr duration storm in the pre-developed condition. For all storm events less frequent than the critical storm, on-site flow rate reduced to pre-developed flow of the same frequency (i.e. Post-100yr to Pre-100yr). Off-site tributary flow rates have been added to on-site allowable release rates for each storm frequency.

Basin 3

Wet Extended Basin **NWL = 654.00** **Spillway = 658.00** **T/Dike = 660.00**	**Outlets:** **Outlet: (4) 4'-0" Windows @ Elev. = 657.30** **Outlet: 33" Wide X 6" High Orifice @ Elev. = 654.90** **Outlet: 36" Pipe @ Elev. = 651.00** **WQv = 0.397 ac-ft. @ Elev. = 654.86** **WQv Orifice: 3-1/2" Orifice @ Elev. = 654.00**

Frequency	Inflow	Outflow	Storage		Elevation
(yr)	(cfs)	(cfs)	(ft^3)	(ac-ft)	(ft)
1	20.50	4.95	36,762	0.84	655.71
2	32.95	7.04	51,007	1.17	656.28
5	46.00	8.66	66,605	1.53	656.86
10	56.45	9.75	79,440	1.82	657.30
25	69.88	22.93	90,794	2.08	657.68
50	76.62	30.58	94,989	2.18	657.82
100	85.69	41.65	100,230	2.30	657.99

Spillway	
Design Discharge (cfs)**	85.69
Spillway Invert	658.00
Spillway Length	50.00
Top of Dike Elevation	660.00
Flow Depth (ft) [C=2.6]	0.76
Freeboard	1.24
Spillway Side Slope	4:1
Velocity	2.26

**Post-Developed 100yr Discharge

Basin 4

Wet Extended Basin **NWL = 703.00** **Spillway = 706.00** **T/Dike = 708.00**	**Outlets:** **Outlet: (3) 4'-0" Windows @ Elev. = 705.40** **Outlet: (1) 0'-5" Windows @ Elev. = 703.60** **Outlet: 36" Pipe @ Elev. = 699.00** **WQv = 0.253 ac-ft. @ Elev. = 703.53** **WQv Orifice: 3-3/8" Orifice @ Elev. = 703.00**

Frequency	Inflow	Outflow	Storage		Elevation
(yr)	(cfs)	(cfs)	(ft^3)	(ac-ft)	(ft)
1	10.74	0.62	25,139	0.58	704.18
2	18.23	1.37	34,761	0.80	704.58
5	26.45	2.41	45,534	1.05	705.04
10	33.16	3.32	54,652	1.25	705.38
25	41.86	10.12	62,659	1.44	705.68
50	46.27	15.14	66,174	1.52	705.81
100	52.21	22.28	70,373	1.62	705.97

Spillway	
Design Discharge (cfs)**	52.21
Spillway Invert	706.00
Spillway Length	50.00
Top of Dike Elevation	708.00
Flow Depth (ft) [C=2.6]	0.54
Freeboard	1.46
Spillway Side Slope	4:1
Velocity	1.92

**Post-Developed 100yr Discharge

Runoff curve number and runoff (TR-55)

Project: Tall Oaks
Basin 1

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

On-site Pre-Developed

	Drainage Area:	40.22 Ac
	Curve Number:	62.0
	Year storm:	1
	Intensity:	2.38
S=(1000/CN)-10	S=	6.12
$Q=(P-0.2S)^2/(P+0.8S)$	Q=	0.18 in
V=(Q/12*43560*A)	V=	26,797 ft^3
		0.62 Ac-ft

On-site Post-Developed

	Drainage Area:	39.75 Ac
	Curve Number:	75.7
	Year storm:	1
	Intensity:	2.38
S=(1000/CN)-10	S=	3.20
$Q=(P-0.2S)^2/(P+0.8S)$	Q=	0.61 in
V=(Q/12*43560*A)	V=	88,358 ft^3
		2.03 Ac-ft

	CN	Yr Storm	S	Q (in)	V (ft^3)
Onsite Pre-developed	62.0	1	6.12	0.18	26797
Onsite Post-developed	75.7	1	3.20	0.61	88358

$((V_{post}/V_{pre})-1)*100\%$ = Runoff_Increase 230 %

Between %'s		Storm Frequency
--	10	1
10.0	20	2
20.0	50	5
50.0	100	10
100.0	250	25
250.0	500	50
500.0	--	100
Critical Storm:		***25 yr***

Runoff curve number and runoff (TR-55)

Project: Tall Oaks
Basin 2

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

On-site Pre-Developed

	Drainage Area:	24.31 Ac
	Curve Number:	70.5
	Year storm:	1
	Intensity:	2.38
S=(1000/CN)-10	S=	4.19
$Q=(P-0.2S)^2/(P+0.8S)$	Q=	0.42 in
V=(Q/12*43560*A)	V=	36,664 ft^3
		0.84 Ac-ft

On-site Post-Developed

	Drainage Area:	23.89 Ac
	Curve Number:	81.5
	Year storm:	1
	Intensity:	2.38
S=(1000/CN)-10	S=	2.28
$Q=(P-0.2S)^2/(P+0.8S)$	Q=	0.88 in
V=(Q/12*43560*A)	V=	76,470 ft^3
		1.76 Ac-ft

	CN	Yr Storm	S	Q (in)	V (ft^3)
Onsite Pre-developed	70.5	1	4.19	0.42	36664
Onsite Post-developed	81.5	1	2.28	0.88	76470

$((V_{post}/V_{pre})-1)*100\%$ = Runoff_Increase 109 %

Between %'s		Storm Frequency
--	10	1
10.0	20	2
20.0	50	5
50.0	100	10
100.0	250	25
250.0	500	50
500.0	--	100
Critical Storm:		***25 yr***

Runoff curve number and runoff (TR-55)

Project: Tall Oaks
Basin 3

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

On-site Pre-Developed

	Drainage Area:	16.16 Ac
	Curve Number:	75.4
	Year storm:	1
	Intensity:	2.38
S=(1000/CN)-10	S=	3.26
$Q=(P-0.2S)^2/(P+0.8S)$	Q=	0.60 in
V=(Q/12*43560*A)	V=	35,058 ft^3
		0.80 Ac-ft

On-site Post-Developed

	Drainage Area:	15.17 Ac
	Curve Number:	85.0
	Year storm:	1
	Intensity:	2.38
S=(1000/CN)-10	S=	1.77
$Q=(P-0.2S)^2/(P+0.8S)$	Q=	1.08 in
V=(Q/12*43560*A)	V=	59,634 ft^3
		1.37 Ac-ft

	CN	Yr Storm	S	Q (in)	V (ft^3)
Onsite Pre-developed	75.4	1	3.26	0.60	35058
Onsite Post-developed	85.0	1	1.77	1.08	59634

$((V_{post}/V_{pre})-1)*100\%$ = Runoff_Increase 70 %

Between %'s		Storm Frequency
--	10	1
10.0	20	2
20.0	50	5
50.0	100	10
100.0	250	25
250.0	500	50
500.0	--	100
Critical Storm:		***10 yr***

Runoff curve number and runoff (TR-55)

Project: Tall Oaks
Basin 4

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

On-site Pre-Developed

	Drainage Area:	8.14 Ac
	Curve Number:	74.7
	Year storm:	1
	Intensity:	2.38
S=(1000/CN)-10	S=	3.38
$Q=(P-0.2S)^2/(P+0.8S)$	Q=	0.57 in
V=(Q/12*43560*A)	V=	16,881 ft^3
		0.39 Ac-ft

On-site Post-Developed

	Drainage Area:	10.03 Ac
	Curve Number:	81.5
	Year storm:	1
	Intensity:	2.38
S=(1000/CN)-10	S=	2.28
$Q=(P-0.2S)^2/(P+0.8S)$	Q=	0.88 in
V=(Q/12*43560*A)	V=	32,099 ft^3
		0.74 Ac-ft

	CN	Yr Storm	S	Q (in)	V (ft^3)
Onsite Pre-developed	74.7	1	3.38	0.57	16881
Onsite Post-developed	81.5	1	2.28	0.88	32099

$((V_{post}/V_{pre})-1)*100\%$ = Runoff_Increase 90 %

Between %'s		Storm Frequency
--	10	1
10.0	20	2
20.0	50	5
50.0	100	10
100.0	250	25
250.0	500	50
500.0	--	100
Critical Storm:		***10 yr***

Water Quality Volume

Project:	Tall Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	24-0202	Checked By:	JAB	Date:	9/8/25
Basin ID:	1	Revised By:		Date:	

Required Water Quality Volume

$WQ_v = P\ Rv\ A/12$ **New Development Only**

Site Drainage Area (A) = 64.20 acres (To Basin) WQ_v = 1.006 acre-ft.

Rainfall Depth (P) = 0.9 in. Sediment Storage Allowance = 0 %

Sediment Storage Allowance = 0.000 Ac-ft

Runoff Coefficient (Rv) = 0.21 **Total WQ_v =** 1.006 Ac-ft

= 43,830 cu.ft.

Rv=0.05 +0.9i; i=fraction of post -construction impervious surface

Impervious (i) = 0.18 Existing Imperv 5.80 ac

Proposed Imperv 5.54 ac

Water Quality Release Rate

Q_{wqv} = Total WQ_v/RT

Required Retention Time (RT) = 24 hours Q_{wqv} = 0.507 cfs

Provided Retention Time (PT) = 65 hours

Water Quality Outlet Orifice

Contour Areas

	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev	Area at Elev
Basin Inv. =	631.00	48385	0.00	0.00			
Contour 1 =	632.00	54388	51386.45	51386.45	631.85	43830.07	50945.15
Contour 2 =	633.00	60539	57463.13	108849.58			
Contour 3 =	634.00	66839	63688.95	172538.53			
Contour 4 =	635.00	73290	70064.40	242602.93			

$Q = N\ C_d\ A_o\ (2\ g\ \Delta h)^{1/2}$

C_d = 0.61

A_o = 0.2046 $\pi\ D^2/4$ for circular orifices; = h * w for rectangular orifices

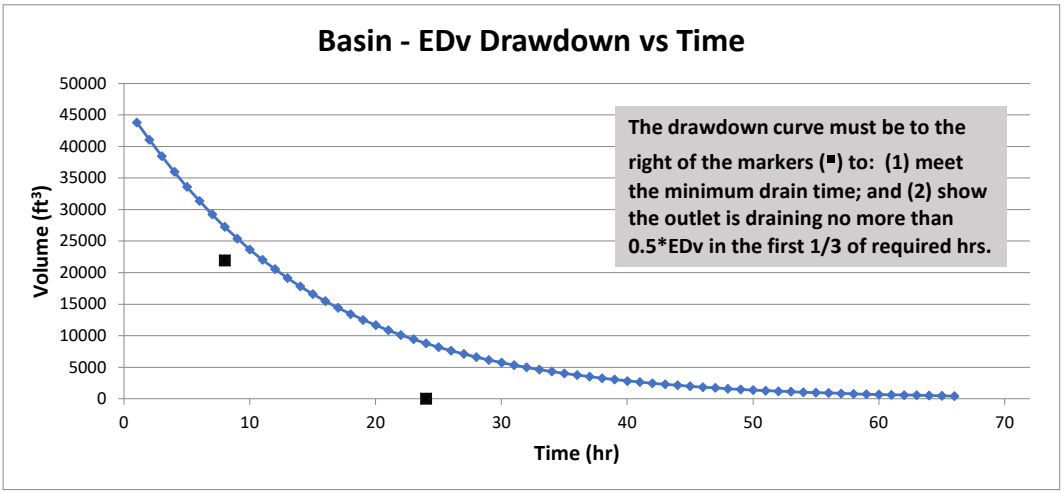
g = 32.20 ft/sec^2

Q = 0.654 cfs

Orifice h = 6.125 inch Orifice w = 0.00 inch (= 0 for circular orifice)

Number of orifices = N = 1

Δh_{avg} = (Elev at V - Basin Inv)/2 = 0.43 ft



Water Quality Volume - Drawdown Calculation

Project:	Talls Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	24-0202	Checked By:	JAB	Date:	9/8/25
Basin ID:	1	Revised By:		Date:	

Timestep	60	min
Orifice Diam.	6.125	in
Orifice Area	0.2046	ft
Orifice C	0.6	
Orifice Inv	631.00	
Q @ Top of Orifice	0.50	

Drawdown Chart Data	
8	21,915
24	0

Time (hrs)	Stage	Storage	Discharge (c.f.s.)	Discharge (c.f.)
0	631.85	43830	0.762	2742.16
1.000	631.80	41088	0.727	2616.90
2.000	631.75	38471	0.692	2491.49
3.000	631.70	35980	0.657	2365.92
4.000	631.65	33614	0.622	2240.18
5.000	631.61	31373	0.587	2114.23
6.000	631.57	29259	0.552	1988.06
7.000	631.53	27271	0.517	1861.64
8.000	631.49	25409	0.482	1735.83
9.000	631.46	23674	0.449	1617.24
10.000	631.43	22056	0.419	1506.76
11.000	631.40	20550	0.390	1403.83
12.000	631.37	19146	0.363	1307.93
13.000	631.35	17838	0.338	1218.58
14.000	631.32	16619	0.315	1135.33
15.000	631.30	15484	0.294	1057.77
16.000	631.28	14426	0.274	985.51
17.000	631.26	13441	0.255	918.19
18.000	631.24	12523	0.238	855.46
19.000	631.23	11667	0.221	797.02
20.000	631.21	10870	0.206	742.58
21.000	631.20	10127	0.192	691.85
22.000	631.18	9436	0.179	644.58
23.000	631.17	8791	0.167	600.55
24.000	631.16	8190	0.155	559.52
25.000	631.15	7631	0.145	521.30
26.000	631.14	7110	0.135	485.69
27.000	631.13	6624	0.126	452.51
28.000	631.12	6171	0.117	421.60
29.000	631.11	5750	0.109	392.80
30.000	631.10	5357	0.102	365.96
31.000	631.10	4991	0.095	340.96
32.000	631.09	4650	0.088	317.67
33.000	631.08	4332	0.082	295.97
34.000	631.08	4036	0.077	275.75
35.000	631.07	3761	0.071	256.91
36.000	631.07	3504	0.066	239.36
37.000	631.06	3264	0.062	223.01
38.000	631.06	3041	0.058	207.77
39.000	631.06	2834	0.054	193.58
40.000	631.05	2640	0.050	180.36
41.000	631.05	2460	0.047	168.04
42.000	631.04	2292	0.043	156.56
43.000	631.04	2135	0.041	145.86
44.000	631.04	1989	0.038	135.90
45.000	631.04	1853	0.035	126.61
46.000	631.03	1727	0.033	117.96
47.000	631.03	1609	0.031	109.91
48.000	631.03	1499	0.028	102.40
49.000	631.03	1397	0.027	95.40
50.000	631.03	1301	0.025	88.88
51.000	631.02	1212	0.023	82.81
52.000	631.02	1129	0.021	77.16
53.000	631.02	1052	0.020	71.88
54.000	631.02	980	0.019	66.97
55.000	631.02	913	0.017	62.40
56.000	631.02	851	0.016	58.14
57.000	631.02	793	0.015	54.16
58.000	631.01	739	0.014	50.46
59.000	631.01	688	0.013	47.02
60.000	631.01	641	0.012	43.80
61.000	631.01	597	0.011	40.81
62.000	631.01	557	0.011	38.02
63.000	631.01	519	0.010	35.43
64.000	631.01	483	0.009	33.01
65.000	631.01	450	0.009	30.75
	631.01	419	0.008	28.65
	631.01	391	0.007	26.69
	631.01	364	0.007	24.87
	631.01	339	0.006	23.17
	631.01	316	0.006	21.59
	631.01	294	0.006	20.11
	631.01	274	0.005	18.74

Stage	Storage (cf)
631.00	0.00
632.00	51386.45
633.00	108849.58
634.00	172538.53
635.00	242602.93

The stage and storage columns to the left may need to be adjusted based on design

Water Quality Volume

Project:	Tall Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	18-0085	Checked By:	JAB	Date:	9/8/25
Basin ID:	2	Revised By:		Date:	

Required Water Quality Volume

$WQ_v = P\ Rv\ A/12$ **New Development Only**

Site Drainage Area (A) = 23.89 acres (To Basin) WQ_v = 0.579 acre-ft.

Rainfall Depth (P) = 0.9 in. Sediment Storage Allowance = 0 %
Sediment Storage Allowance = 0.000 Ac-ft

Runoff Coefficient (Rv) = 0.32 **Total WQ_v =** 0.579 Ac-ft
= 25,242 cu.ft.

Rv=0.05 +0.9i; i=fraction of post -construction impervious surface

Impervious (i) = 0.30 Existing Imperv 0.50 ac
Proposed Imperv 6.76 ac

Water Quality Release Rate

Q_{wqv} = Total WQ_v/RT

Required Retention Time (RT) = 24 hours Q_{wqv} = 0.292 cfs

Provided Retention Time (PT) = 59 hours

Water Quality Outlet Orifice

Contour Areas

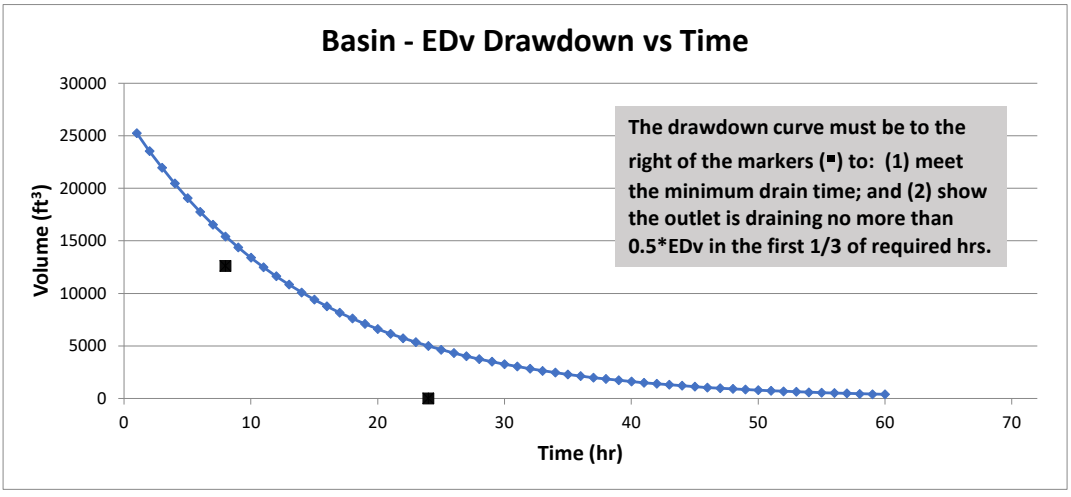
	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev	Area at Elev
Basin Inv. =	633.00	43170	0.00	0.00			
Contour 1 =	634.00	47566	45367.73	45367.73	633.56	25242.31	44392.76
Contour 2 =	635.00	52111	49838.43	95206.15			
Contour 3 =	636.00	56807	54459.23	149665.38			
Contour 3 =	637.00	61652	59229.65	208895.03			

$Q = N\ C_d\ A_o\ (2\ g\ \Delta h)^{1/2}$

C_d = 0.61
A_o = 0.1726 $\pi\ D^2/4$ for circular orifices; = h * w for rectangular orifices
g = 32.20 ft/sec^2
Q = 0.446 cfs

Orifice h = 5.625 inch Orifice w = 0.00 inch (= 0 for circular orifice)
Number of orifices = N = 1

Δh_{avg} = (Elev at V - Basin Inv)/2 = 0.28 ft



bayer becker

Water Quality Volume - Drawdown Calculation

Project:	Tall Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	24-0202	Checked By:	JAB	Date:	9/8/25
Basin ID:	2	Revised By:		Date:	

Timestep	60	min
Orifice Diam.	5.625	in
Orifice Area	0.1726	ft
Orifice C	0.6	
Orifice Inv	633.00	
Q @ Top of Orifice	0.40	

Drawdown Chart Data	
8	12,621
24	0

Time (hrs)	Stage	Storage	Discharge (c.f.s.)	Discharge (c.f.)
0	633.56	25242	0.472	1697.50
1.000	633.52	23545	0.443	1595.84
2.000	633.48	21949	0.415	1493.97
3.000	633.45	20455	0.387	1392.95
4.000	633.42	19062	0.361	1298.09
5.000	633.39	17764	0.336	1209.70
6.000	633.36	16554	0.313	1127.32
7.000	633.34	15427	0.292	1050.55
8.000	633.32	14376	0.272	979.01
9.000	633.30	13397	0.253	912.34
10.000	633.28	12485	0.236	850.21
11.000	633.26	11635	0.220	792.31
12.000	633.24	10843	0.205	738.36
13.000	633.22	10104	0.191	688.08
14.000	633.21	9416	0.178	641.22
15.000	633.19	8775	0.166	597.55
16.000	633.18	8177	0.155	556.86
17.000	633.17	7620	0.144	518.94
18.000	633.16	7102	0.134	483.60
19.000	633.15	6618	0.125	450.67
20.000	633.14	6167	0.117	419.98
21.000	633.13	5747	0.109	391.38
22.000	633.12	5356	0.101	364.73
23.000	633.11	4991	0.094	339.89
24.000	633.10	4651	0.088	316.74
25.000	633.10	4335	0.082	295.17
26.000	633.09	4039	0.076	275.07
27.000	633.08	3764	0.071	256.34
28.000	633.08	3508	0.066	238.88
29.000	633.07	3269	0.062	222.62
30.000	633.07	3046	0.058	207.46
31.000	633.06	2839	0.054	193.33
32.000	633.06	2646	0.050	180.16
33.000	633.05	2465	0.047	167.90
34.000	633.05	2298	0.043	156.46
35.000	633.05	2141	0.041	145.81
36.000	633.04	1995	0.038	135.88
37.000	633.04	1859	0.035	126.62
38.000	633.04	1733	0.033	118.00
39.000	633.04	1615	0.031	109.97
40.000	633.03	1505	0.028	102.48
41.000	633.03	1402	0.027	95.50
42.000	633.03	1307	0.025	89.00
43.000	633.03	1218	0.023	82.94
44.000	633.03	1135	0.021	77.29
45.000	633.02	1058	0.020	72.02
46.000	633.02	986	0.019	67.12
47.000	633.02	919	0.017	62.55
48.000	633.02	856	0.016	58.29
49.000	633.02	798	0.015	54.32
50.000	633.02	743	0.014	50.62
51.000	633.02	693	0.013	47.17
52.000	633.01	646	0.012	43.96
53.000	633.01	602	0.011	40.97
54.000	633.01	561	0.011	38.18
55.000	633.01	522	0.010	35.58
56.000	633.01	487	0.009	33.16
57.000	633.01	454	0.009	30.90
58.000	633.01	423	0.008	28.79
59.000	633.01	394	0.007	26.83
	633.01	367	0.007	25.01
	633.01	342	0.006	23.30
	633.01	319	0.006	21.72
	633.01	297	0.006	20.24
	633.01	277	0.005	18.86
	633.01	258	0.005	17.57
	633.01	241	0.005	16.38
	633.00	224	0.004	15.26
	633.00	209	0.004	14.22
	633.00	195	0.004	13.25
	633.00	181	0.003	12.35
	633.00	169	0.003	11.51
	633.00	158	0.003	10.73

Stage	Storage (cf)
633.00	0.00
634.00	45367.73
635.00	95206.15
636.00	149665.38

The stage and storage columns to the left may need to be adjusted based on design

Still Need

Water Quality Volume

Project:	Tall Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	24-0202	Checked By:	JAB	Date:	9/8/25
Basin ID:	3	Revised By:		Date:	

Required Water Quality Volume

WQ_v = P Rv A/12 — **New Development Only**

Site Drainage Area (A) = 15.17 acres (To Basin) — WQ_v = 0.397 acre-ft.

Rainfall Depth (P) = 0.9 in. — Sediment Storage Allowance = 0 %

Sediment Storage Allowance = 0.000 Ac-ft

Runoff Coefficient (Rv) = 0.35 — **Total WQ_v =** 0.397 Ac-ft

Rv=0.05 +0.9i; i=fraction of post -construction impervious surface — = 17,303 cu.ft.

Impervious (i) = 0.33

Existing Imperv 0.74 ac

Proposed Imperv 4.30 ac

Water Quality Release Rate

Q_{wqv} = Total WQ_v/RT

Required Retention Time (RT) = 24 hours — Q_{wqv} = 0.200 cfs

Provided Retention Time (PT) = 61 hours

Water Quality Outlet Orifice

Contour Areas

	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev	Area at Elev
Basin Inv. =	654.00	18576	0.00	0.00			
Contour 1 =	655.00	21727	20151.88	20151.88	654.86	17303.01	21494.1
Contour 2 =	656.00	25029	23378.08	43529.95			
Contour 3 =	657.00	28480	26754.38	70284.33			
Contour 4 =	658.00	32081	30280.30	100564.63			

$Q = N C_d A_o (2 g \Delta h)^{1/2}$

C_d = 0.61

A_o = 0.0668 $\pi D^2/4$ for circular orifices; = h * w for rectangular orifices

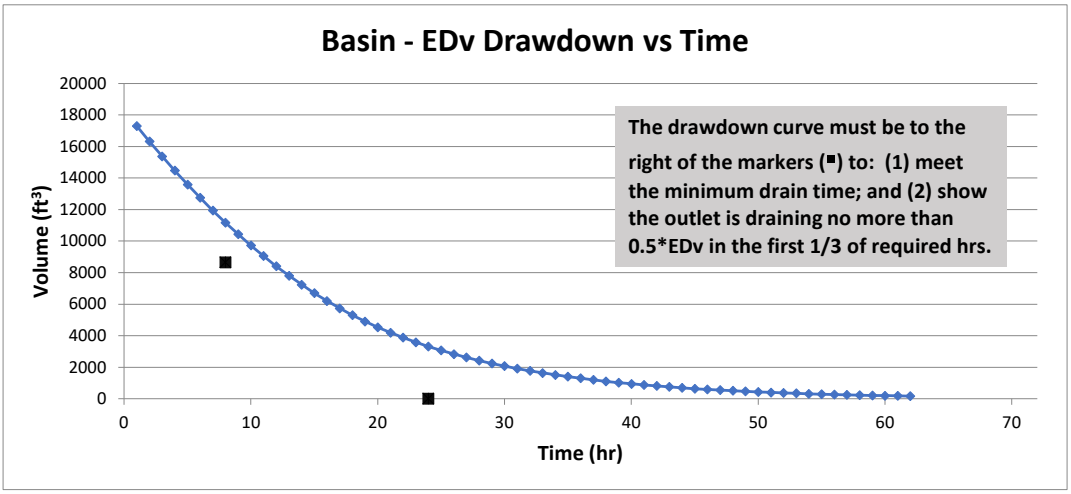
g = 32.20 ft/sec^2

Q = 0.214 cfs

Orifice h = 3.500 inch — Orifice w = 0.00 inch (= 0 for circular orifice)

Number of orifices = N = 1

Δh_{avg} = (Elev at V - Basin Inv)/2 = 0.43 ft



Water Quality Volume - Drawdown Calculation

Project:	Tall Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	24-0202	Checked By:	JAB	Date:	9/8/25
Basin ID:	3	Revised By:		Date:	

Timestep	60	min
Orifice Diam.	3.5	in
Orifice Area	0.0668	ft
Orifice C	0.6	
Orifice Inv	654.00	
Q @ Top of Orifice	0.12	

Drawdown Chart Data	
8	8,652
24	0

Time (hrs)	Stage	Storage	Discharge (c.f.s.)	Discharge (c.f.)
0	654.86	17303	0.272	977.78
1.000	654.81	16325	0.262	943.92
2.000	654.76	15381	0.253	910.03
3.000	654.72	14471	0.243	876.12
4.000	654.67	13595	0.234	842.18
5.000	654.63	12753	0.225	808.22
6.000	654.59	11945	0.215	774.22
7.000	654.55	11171	0.206	740.20
8.000	654.52	10430	0.196	706.13
9.000	654.48	9724	0.187	672.03
10.000	654.45	9052	0.177	637.88
11.000	654.42	8414	0.168	603.69
12.000	654.39	7811	0.158	569.44
13.000	654.36	7241	0.149	535.12
14.000	654.33	6706	0.139	500.74
15.000	654.31	6205	0.130	466.28
16.000	654.28	5739	0.120	431.84
17.000	654.26	5307	0.111	399.35
18.000	654.24	4908	0.103	369.30
19.000	654.23	4539	0.095	341.51
20.000	654.21	4197	0.088	315.81
21.000	654.19	3881	0.081	292.05
22.000	654.18	3589	0.075	270.07
23.000	654.16	3319	0.069	249.75
24.000	654.15	3069	0.064	230.96
25.000	654.14	2838	0.059	213.58
26.000	654.13	2625	0.055	197.51
27.000	654.12	2427	0.051	182.65
28.000	654.11	2245	0.047	168.90
29.000	654.10	2076	0.043	156.19
30.000	654.10	1920	0.040	144.44
31.000	654.09	1775	0.037	133.57
32.000	654.08	1642	0.034	123.52
33.000	654.08	1518	0.032	114.23
34.000	654.07	1404	0.029	105.63
35.000	654.06	1298	0.027	97.68
36.000	654.06	1200	0.025	90.33
37.000	654.06	1110	0.023	83.54
38.000	654.05	1027	0.021	77.25
39.000	654.05	949	0.020	71.44
40.000	654.04	878	0.018	66.06
41.000	654.04	812	0.017	61.09
42.000	654.04	751	0.016	56.49
43.000	654.03	694	0.015	52.24
44.000	654.03	642	0.013	48.31
45.000	654.03	594	0.012	44.68
46.000	654.03	549	0.011	41.31
47.000	654.03	508	0.011	38.21
48.000	654.02	470	0.010	35.33
49.000	654.02	434	0.009	32.67
50.000	654.02	402	0.008	30.21
51.000	654.02	371	0.008	27.94
52.000	654.02	343	0.007	25.84
53.000	654.02	318	0.007	23.89
54.000	654.01	294	0.006	22.10
55.000	654.01	272	0.006	20.43
56.000	654.01	251	0.005	18.90
57.000	654.01	232	0.005	17.47
58.000	654.01	215	0.004	16.16
59.000	654.01	199	0.004	14.94
60.000	654.01	184	0.004	13.82
61.000	654.01	170	0.004	12.78
	654.01	157	0.003	11.82
	654.01	145	0.003	10.93
	654.01	134	0.003	10.11
	654.01	124	0.003	9.35
	654.01	115	0.002	8.64
	654.01	106	0.002	7.99
	654.00	98	0.002	7.39
	654.00	91	0.002	6.83
	654.00	84	0.002	6.32
	654.00	78	0.002	5.84
	654.00	72	0.002	5.40

Stage	Storage (cf)
654.00	0.00
655.00	20151.88
656.00	43529.95
657.00	70284.33

The stage and storage columns to the left may need to be adjusted based on design

Water Quality Volume

Project:	Tall Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	24-0202	Checked By:	JAB	Date:	9/8/25
Basin ID:	4	Revised By:		Date:	

Required Water Quality Volume

$WQ_v = P\ Rv\ A/12$ **New Development Only**

Site Drainage Area (A) = 10.03 acres (To Basin) WQ_v = 0.253 acre-ft.

Rainfall Depth (P) = 0.9 in. Sediment Storage Allowance = 0 %

Sediment Storage Allowance = 0.000 Ac-ft

Runoff Coefficient (Rv) = 0.34 **Total WQ_v =** 0.253 Ac-ft

= 11,018 cu.ft.

Rv=0.05 +0.9i; i=fraction of post -construction impervious surface

Impervious (i) = 0.32 Existing Imperv 0.72 ac

Proposed Imperv 2.47 ac

Water Quality Release Rate

Q_{wqv} = Total WQ_v/RT

Required Retention Time (RT) = 24 hours Q_{wqv} = 0.128 cfs

Provided Retention Time (PT) = 58 hours

Water Quality Outlet Orifice

Contour Areas

	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev	Area at Elev
Basin Inv. =	703.00	19558	0.00	0.00			
Contour 1 =	704.00	22258	20907.60	20907.60	703.53	11017.96	20269.05
Contour 2 =	705.00	25110	23683.98	44591.58			

$Q = N\ C_d\ A_o\ (2\ g\ \Delta h)^{1/2}$

C_d = 0.61

A_o = 0.0621 $\pi\ D^2/4$ for circular orifices; = h * w for rectangular orifices

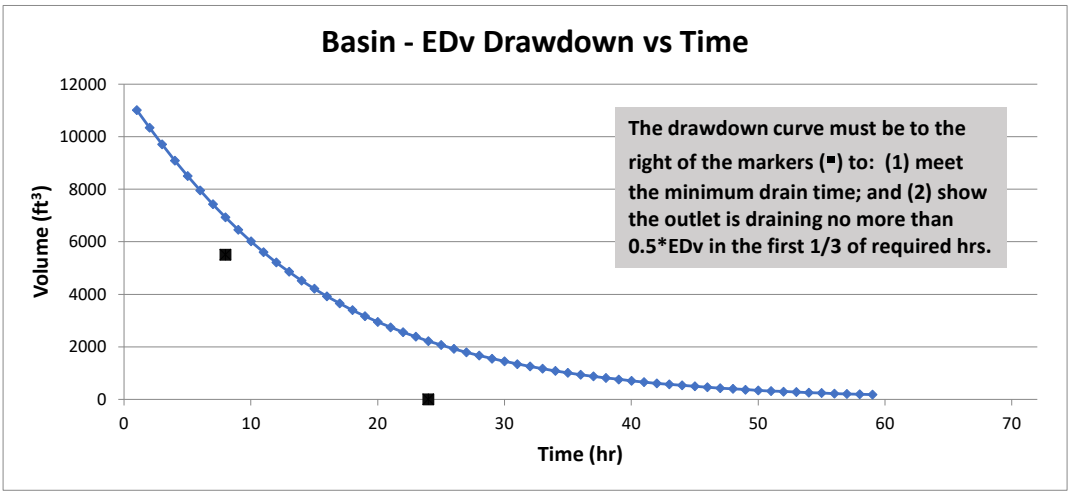
g = 32.20 ft/sec^2

Q = 0.156 cfs

Orifice h = 3.375 inch Orifice w = 0.00 inch (= 0 for circular orifice)

Number of orifices = N = 1

Δh_{avg} = (Elev at V - Basin Inv)/2 = 0.26 ft



Water Quality Volume - Drawdown Calculation

Project:	Tall Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	24-0202	Checked By:	JAB	Date:	9/8/25
Basin ID:	4	Revised By:		Date:	

Timestep	60	min
Orifice Diam.	3.375	in
Orifice Area	0.0621	ft
Orifice C	0.6	
Orifice Inv	703.00	
Q @ Top of Orifice	0.11	

Drawdown Chart Data	
8	5,509
24	0

Time (hrs)	Stage	Storage	Discharge (c.f.s.)	Discharge (c.f.)
0	703.53	11018	0.186	669.37
1.000	703.49	10349	0.178	641.04
2.000	703.46	9708	0.170	612.68
3.000	703.44	9095	0.162	584.28
4.000	703.41	8511	0.154	555.86
5.000	703.38	7955	0.146	527.40
6.000	703.36	7427	0.139	498.89
7.000	703.33	6928	0.131	470.34
8.000	703.31	6458	0.123	441.74
9.000	703.29	6016	0.115	413.07
10.000	703.27	5603	0.107	384.81
11.000	703.25	5218	0.100	358.38
12.000	703.23	4860	0.093	333.77
13.000	703.22	4526	0.086	310.85
14.000	703.20	4215	0.080	289.50
15.000	703.19	3926	0.075	269.62
16.000	703.17	3656	0.070	251.10
17.000	703.16	3405	0.065	233.86
18.000	703.15	3171	0.060	217.80
19.000	703.14	2954	0.056	202.84
20.000	703.13	2751	0.052	188.91
21.000	703.12	2562	0.049	175.94
22.000	703.11	2386	0.046	163.85
23.000	703.11	2222	0.042	152.60
24.000	703.10	2069	0.039	142.12
25.000	703.09	1927	0.037	132.36
26.000	703.09	1795	0.034	123.27
27.000	703.08	1672	0.032	114.81
28.000	703.07	1557	0.030	106.92
29.000	703.07	1450	0.028	99.58
30.000	703.06	1350	0.026	92.74
31.000	703.06	1258	0.024	86.37
32.000	703.06	1171	0.022	80.44
33.000	703.05	1091	0.021	74.91
34.000	703.05	1016	0.019	69.77
35.000	703.05	946	0.018	64.98
36.000	703.04	881	0.017	60.52
37.000	703.04	821	0.016	56.36
38.000	703.04	764	0.015	52.49
39.000	703.03	712	0.014	48.88
40.000	703.03	663	0.013	45.53
41.000	703.03	617	0.012	42.40
42.000	703.03	575	0.011	39.49
43.000	703.03	536	0.010	36.78
44.000	703.02	499	0.010	34.25
45.000	703.02	464	0.009	31.90
46.000	703.02	433	0.008	29.71
47.000	703.02	403	0.008	27.67
48.000	703.02	375	0.007	25.77
49.000	703.02	349	0.007	24.00
50.000	703.02	325	0.006	22.35
51.000	703.01	303	0.006	20.82
52.000	703.01	282	0.005	19.39
53.000	703.01	263	0.005	18.05
54.000	703.01	245	0.005	16.81
55.000	703.01	228	0.004	15.66
56.000	703.01	212	0.004	14.58
57.000	703.01	198	0.004	13.58
58.000	703.01	184	0.004	12.65
	703.01	172	0.003	11.78
	703.01	160	0.003	10.97
	703.01	149	0.003	10.22
	703.01	139	0.003	9.52
	703.01	129	0.002	8.86
	703.01	120	0.002	8.25
	703.01	112	0.002	7.69
	703.00	104	0.002	7.16
	703.00	97	0.002	6.67
	703.00	90	0.002	6.21
	703.00	84	0.002	5.78
	703.00	78	0.001	5.39
	703.00	73	0.001	5.02
	703.00	68	0.001	4.67

Stage	Storage (cf)
703.00	0.00
704.00	20907.60
705.00	44591.58

The stage and storage columns to the left may need to be adjusted based on design

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Sediment Basin Design

Project:	Tall Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	24-0202	Checked By:	JAB	Date:	9/8/25
Basin ID:	1	Revised By:		Date:	

Required Sediment Storage

Sediment Storage:	1000	cu.ft./disturbed acre
Disturbed Tributary Area:	39.75	acres
Required Sediment Storage:	39750.00	cu.ft.
	0.91	ac-ft

Required Dewatering Storage

Dewatering Volume:	1800	cu.ft./tributary acre
Tributary Area:	64.20	acres
Required Dewatering Storage:	115560	cu.ft.
	2.65	ac-ft

Sediment Storage Elevation

Contour Areas

	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev
Basin Inv. =	627.00	25909	0.00	0.00		
Contour 1 =	631.00	48385	148589.50	148590	628.07	39750.00

Dewatering Storage Elevation

Contour Areas

	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev
Outlet Inv. =	631.00	48385	0.00	0.00		
Contour 1 =	632.00	54388	51386.45	51386		
Contour 2 =	633.00	60539	57463.13	108850		
Contour 3 =	634.00	66839	63688.95	172539	633.11	115560.00

$Q = N C_d A_o (2 g \Delta h)^{1/2}$

C_d = 0.61

$A_o = \pi D^2/4$ for circular orifices; = h * w for rectangular orifices

g = 32.20 ft/sec^2

Required Volume = V = 115560 ft^3 Number of orifices = N = 1

Elevation at V = 633.11

Orifice h = 5.000 inch Orifice w = 0.00 inch (= 0 for circular orifice)

Δh^{avg} = (Elev at V - Basin Inv)/2 - 1/2 h = 0.84 ft

Actual A = A_o = 19.63 in^2

Storage = 115,560 ft^3 Q = 0.613 cfs

Provided Retention Time = 52 Hours

Sediment Storage Required:	0.91	ac-ft
Sediment Storage Provided:	0.91	ac-ft
Sediment Storage Zone Depth:	4.00	ft
Dewatering Volume Required:	2.65	ac-ft
Dewatering Volume Provided:	2.65	ac-ft
Dewatering Zoning Depth:	2.11	ft
Total Basin Depth	6.11	ft

Sediment Basin Design

Project:	Tall Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	24-0202	Checked By:	JAB	Date:	9/8/25
Basin ID:	2	Revised By:		Date:	

Required Sediment Storage

Sediment Storage:	1000	cu.ft./disturbed acre
Disturbed Tributary Area:	23.89	acres
Required Sediment Storage:	23885.00	cu.ft.
	0.55	ac-ft

Required Dewatering Storage

Dewatering Volume:	1800	cu.ft./tributary acre
Tributary Area:	23.89	acres
Required Dewatering Storage:	42993	cu.ft.
	0.99	ac-ft

Sediment Storage Elevation

Contour Areas

	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev
Basin Inv. =	629.00	27082	0.00	0.00		
Contour 1 =	633.00	43170	140503.10	140503	629.68	23885.00

Dewatering Storage Elevation

Contour Areas

	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev
Outlet Inv. =	633.00	43170	0.00	0.00		
Contour 1 =	634.00	47566	45367.73	45368	633.95	42993.00
Contour 2 =	635.00	52111	49838.43	95206		

$Q = N C_d A_o (2 g \Delta h)^{1/2}$

C_d = 0.61

$A_o = \pi D^2/4$ for circular orifices; = h * w for rectangular orifices

g = 32.20 ft/sec^2

Required Volume = V = 42993 ft^3 Number of orifices = N = 1

Elevation at V = 633.95

Orifice h = 3.675 inch Orifice w = 0.00 inch (= 0 for circular orifice)

Δh^{avg} = (Elev at V - Basin Inv)/2 - 1/2 h = 0.32 ft

Actual A = A_o = 10.61 in^2

Storage = 42,993 ft^3 Q = 0.204 cfs

Provided Retention Time = 58 Hours

Sediment Storage Required:	0.55	ac-ft
Sediment Storage Provided:	0.55	ac-ft
Sediment Storage Zone Depth:	4.00	ft
Dewatering Volume Required:	0.99	ac-ft
Dewatering Volume Provided:	0.99	ac-ft
Dewatering Zoning Depth:	0.95	ft
Total Basin Depth	4.95	ft

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Sediment Basin Design

Project:	Tall Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	24-0202	Checked By:	JAB	Date:	9/8/25
Basin ID:	3	Revised By:		Date:	

Required Sediment Storage

Sediment Storage:	1000	cu.ft./disturbed acre
Disturbed Tributary Area:	15.17	acres
Required Sediment Storage:	15170.00	cu.ft.
	0.35	ac-ft

Required Dewatering Storage

Dewatering Volume:	1800	cu.ft./tributary acre
Tributary Area:	15.17	acres
Required Dewatering Storage:	27306	cu.ft.
	0.63	ac-ft

Sediment Storage Elevation

Contour Areas

	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev
Basin Inv. =	639.00	5063	0.00	0.00		
Contour 1 =	654.00	18576	177291.38	177291	640.28	15170.00

Dewatering Storage Elevation

Contour Areas

	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev
Outlet Inv. =	654.00	18576	0.00	0.00		
Contour 1 =	655.00	21727	20151.88	20152		
Contour 2 =	656.00	25029	23378.08	43530	655.31	27306.00

$Q = N C_d A_o (2 g \Delta h)^{1/2}$

C_d = 0.61

$A_o = \pi D^2/4$ for circular orifices; = h * w for rectangular orifices

g = 32.20 ft/sec^2

Required Volume = V = 27306 ft^3 Number of orifices = N = 1

Elevation at V = 655.31

Orifice h = 2.500 inch Orifice w = 0.00 inch (= 0 for circular orifice)

Δh^{avg} = (Elev at V - Basin Inv)/2 - 1/2 h = 0.55 ft

Actual A = A_o = 4.91 in^2

Storage = 27,306 ft^3 Q = 0.124 cfs

Provided Retention Time = 61 Hours

Sediment Storage Required:	0.35	ac-ft
Sediment Storage Provided:	0.35	ac-ft
Sediment Storage Zone Depth:	15.00	ft
Dewatering Volume Required:	0.63	ac-ft
Dewatering Volume Provided:	0.63	ac-ft
Dewatering Zoning Depth:	1.31	ft
Total Basin Depth	16.31	ft

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Sediment Basin Design

Project:	Tall Oaks	Designed By:	JMW	Date:	9/8/25
Job No.:	24-0202	Checked By:	JAB	Date:	9/8/25
Basin ID:	4	Revised By:		Date:	

Required Sediment Storage

Sediment Storage:	1000	cu.ft./disturbed acre
Disturbed Tributary Area:	10.03	acres
Required Sediment Storage:	10030.00	cu.ft.
	0.23	ac-ft

Required Dewatering Storage

Dewatering Volume:	1800	cu.ft./tributary acre
Tributary Area:	10.03	acres
Required Dewatering Storage:	18054	cu.ft.
	0.41	ac-ft

Sediment Storage Elevation

Contour Areas

	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev
Basin Inv. =	699.00	10338	0.00	0.00		
Contour 1 =	703.00	19558	59791.10	59791	699.67	10030.00

Dewatering Storage Elevation

Contour Areas

	Elevation ft	Area ft^2	Volume ft^3	Cum. Vol. ft^3	Elevation at V	Storage at Elev
Outlet Inv. =	703.00	19558	0.00	0.00		
Contour 1 =	704.00	22258	20907.60	20908	703.86	18054.00
Contour 2 =	705.00	25110	23683.98	44592		

$Q = N C_d A_o (2 g \Delta h)^{1/2}$

C_d = 0.61

$A_o = \pi D^2/4$ for circular orifices; = h * w for rectangular orifices

g = 32.20 ft/sec^2

Required Volume = V = 18054 ft^3 Number of orifices = N = 1

Elevation at V = 703.86

Orifice h = 2.375 inch Orifice w = 0.00 inch (= 0 for circular orifice)

Δh^{avg} = (Elev at V - Basin Inv)/2 - 1/2 h = 0.33 ft

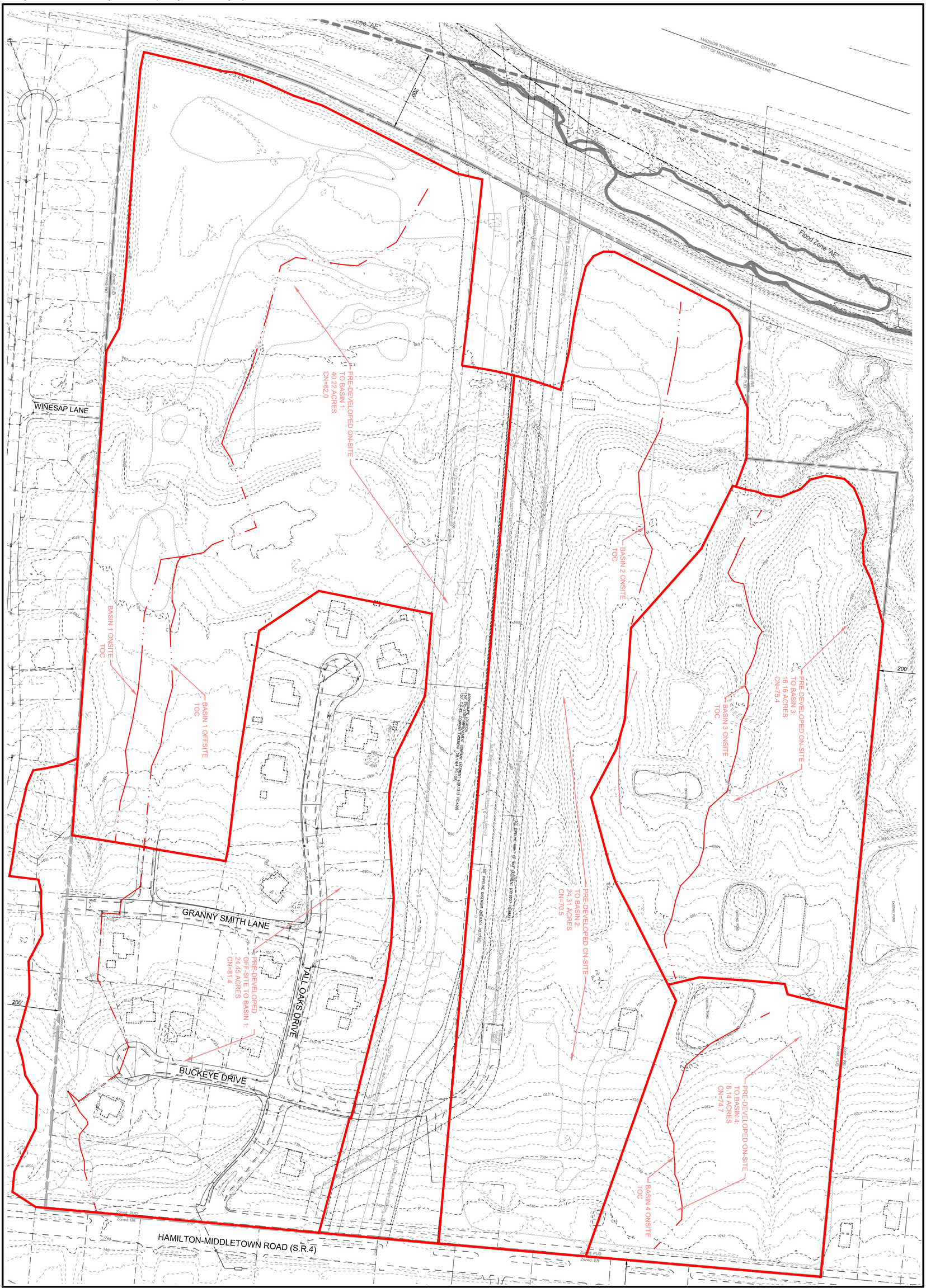
Actual A = A_o = 4.43 in^2

Storage = 18,054 ft^3 Q = 0.087 cfs

Provided Retention Time = 58 Hours

Sediment Storage Required:	0.23	ac-ft
Sediment Storage Provided:	0.23	ac-ft
Sediment Storage Zone Depth:	4.00	ft
Dewatering Volume Required:	0.41	ac-ft
Dewatering Volume Provided:	0.41	ac-ft
Dewatering Zoning Depth:	0.86	ft
Total Basin Depth	4.86	ft

Plot time: Sep 10, 2025 - 12:57pm
Drawing name: J:\2024\24-0202\CV\Design Calcs\Preliminary Drainage\24-0202 DRN.dwg - Layout Tab: PRE



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Sheet: PRE
Drawing: 24-0202 DRN
Drawn by: JMW
Checked By: JAB
Issue Date: 9-9-25

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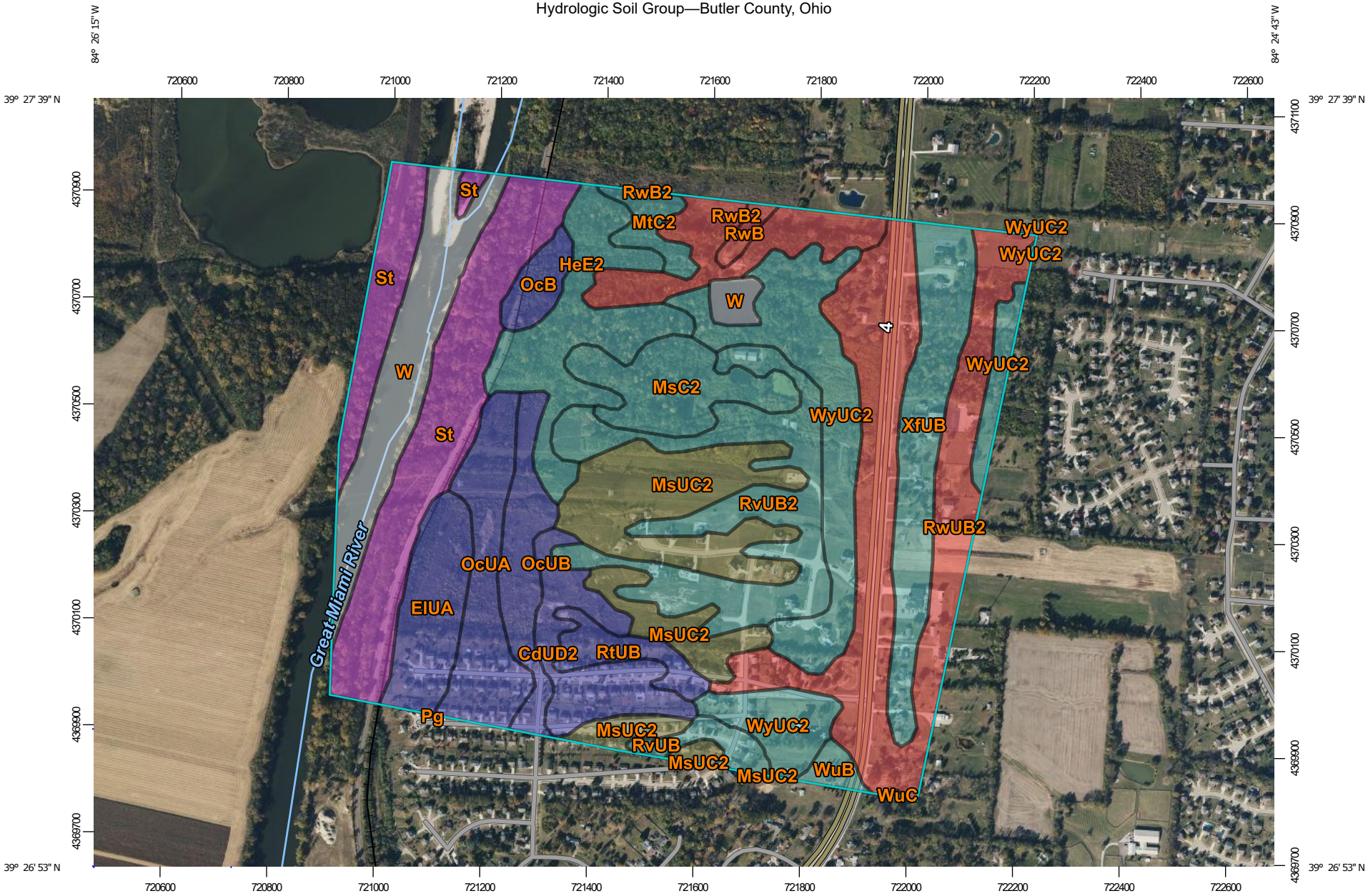
TALL OAKS

SECTION 36, TOWN 3, RANGE 3
CITY OF MONROE, BUTLER COUNTY, OHIO

PRE-DEVELOPED DRAINAGE MAP

Item	Revision Description	Date	Drwn:	Chk:
	PRELIMINARY			

Basis of Bearings: State Plane NAD83 (2011)
SCALE: 1" = 100'
0 100 150


84° 26' 15" W
84° 24' 43" W
39° 27' 39" N
39° 26' 53" N
720600
720800
721000
721200
721400
721600
721800
722000
722200
722400
722600
4371100
4370900
4370700
4370500
4370300
4370100
4369900
4369700
St
RwB2
MtC2
RwB
WyUC2
HeE2
OcB
W
4
MsC2
XfUB
MsUC2
RvUB2
RwUB2
OcUA
OcUB
ElUA
CdUD2
RtUB
Pg
RvUB
WuB
WuC
Great Miami River
Map Scale: 1:10,100 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 100 200 400 600
Feet
0 450 900 1800 2700
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Butler County, Ohio
Survey Area Data: Version 24, Aug 27, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 28, 2019—Dec 5, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CdUD2	Casco and Rodman soils, and Urban land, 6 to 18 percent slopes, moderately eroded	B	11.1	3.6%
ElUA	Eldean-Urban land complex, 0 to 2 percent slopes	B	11.1	3.6%
HeE2	Hennepin-Miamian silt loams, 18 to 25 percent slopes, moderately eroded	C	17.5	5.7%
MsC2	Miamian-Russell silt loams, 6 to 12 percent slopes, eroded	C	11.8	3.8%
MsUC2	Miamian-Russell-Urban land complex, 6 to 12 percent slopes, eroded	C/D	28.3	9.2%
MtC2	Miamian-Russell silt loams, bedrock substratum, 6 to 12 percent slopes, eroded	C	3.5	1.1%
OcB	Ockley silt loam, Southern Ohio Till Plain, 2 to 6 percent slopes	B	3.6	1.2%
OcUA	Ockley, Southern Ohio Till Plain-Urban land complex, 0 to 2 percent slopes	B	13.6	4.4%
OcUB	Ockley, Southern Ohio Till Plain-Urban land complex, 2 to 6 percent slopes	B	9.2	3.0%
Pg	Pits, gravel		0.0	0.0%
RtUB	Russell-Urban land complex, 2 to 6 percent slopes	B	4.7	1.5%
RvUB	Russell-Miamian-Urban land complex, 2 to 6 percent slopes	C	3.1	1.0%
RvUB2	Russell-Miamian-Urban land complex, 2 to 6 percent slopes, moderately eroded	C	25.9	8.4%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
RwB	Russell-Miamian silt loams, bedrock substratum, 2 to 6 percent slopes	D	1.3	0.4%
RwB2	Russell-Miamian silt loams, bedrock substratum, 2 to 6 percent slopes, moderately eroded	D	11.5	3.7%
RwUB2	Russell-Miamian, bedrock substratum-Urban land complex, 2 to 6 percent slopes, moderately eroded	D	44.7	14.5%
St	Stonelick fine sandy loam	A	36.1	11.7%
W	Water		19.8	6.5%
WuB	Wynn-Urban land complex, gently sloping	C	1.7	0.6%
WuC	Wynn-Urban land complex, sloping	C	0.1	0.0%
WyUC2	Wynn-Urban land complex, 6 to 12 percent slopes, eroded	C	30.4	9.9%
XfUB	Xenia, bedrock substratum-Urban land complex, 2 to 6 percent slopes	C	18.3	6.0%
Totals for Area of Interest			**307.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

BASIN #1:
43,830 CF WQv

BASIN #2:
25,242 CF WQv

BASIN #3:
17,303 CF WQv

BASIN #4:
11,018 CF WQv

AREA TO BASIN #1:
39.75 ACRES
CN=75.7

AREA TO BASIN #2:
23.89 ACRES
CN=81.5

AREA TO BASIN #3:
15.17 ACRES
CN=85.0

AREA TO BASIN #4:
10.03 ACRES
CN=81.5

OFFSITE TO BASIN #1:
24.45 ACRES
CN=81.4

RETENTION POND #1
W.S.Elev.=631.0

RETENTION POND #2
W.S.Elev.=633.0

RETENTION POND #3
W.S.Elev.=658.0

RETENTION POND #4
W.S.Elev.=703.0

AUTUMN OAK DRIVE
CATALPA WAY
HONEY LOCUST LANE
LINDEN DRIVE
SHUMARD COURT
TALL OAKS DRIVE
TUPELO DRIVE
WOODBINE WAY
WINESAP LANE
GRANNY SMITH LANE
BUCKEYE DRIVE
PERSIMMON LANE
HAMILTON-MIDDLETOWN ROAD (S.R.4)

8' WALKING TRAIL
10' WALKING TRAIL

OPEN SPACE

GREAT MIAMI RIVER
MASON TOWNSHIP CORPORATION LINE
CITY OF MONROE CORPORATION LINE
Flood Zone "AE"

Basis of Bearing:
State Plane NAD83 (2011)
0 100 150
SCALE: 1" = 100'

PRELIMINARY

Item	Revision Description	Date	Drwn	Chk

TALL OAKS

SECTION 36, TOWN 3, RANGE 3
CITY OF MONROE, BUTLER COUNTY, OHIO

PRELIMINARY POST-DEVELOPED DRAINAGE MAP

bayer becker
www.bayerbecker.com
6900 Wedgewood Road, Suite A
Mason, OH 45040 - 513.336.6600

Drawing:	24-0202 DRN
Drawn by:	JMW
Checked By:	JAB
Issue Date:	9-8-25
Sheet:	POST

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Plot time: Sep 10, 2025 - 12:56pm
Drawing name: J:\2024\24-0202\CV\Design Calcs\Preliminary Drainage\24-0202 DRN.dwg - Layout Tab: POST

Project: Tall Oaks

Drainage Area Description:

Pre-Developed On-Site Conditions to Basin 1

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

Drainage Area = 40.22 Acres

Soil Types:

53 %	Type 'B'
21 %	Type 'C'
25 %	Type 'D'

Land Use:

Brush (Good)	19.69 acres	49 %
Woods (Good)	15.26 acres	38 %
Open Space (Fair)	3.08 acres	8 %
Open Space (Good)	2.19 acres	5 %

Composite Runoff Curve Number:

Ground Cover	Soil Type	CN	Soil Type %	Land Use %	CN*Soil %*Land %
Brush (Good)	B	48	53	49	12.6
	C	65	21	49	6.8
	D	73	25	49	9.1
Woods (Good)	B	55	53	38	11.1
	C	70	21	38	5.6
	D	77	25	38	7.4
Open Space (Fair)	B	69	53	8	2.8
	C	79	21	8	1.3
	D	84	25	8	1.6
Open Space (Good)	B	61	53	5	1.8
	C	74	21	5	0.9
	D	80	25	5	1.1

Composite CN = 62.0

Time of Concentration

			Tc
Sheet Flow:			
Length = 100	Slope(ft/ft) = 0.074	Manning's, n = 0.24 *(light underbrush)*	**0.149** *hr*
Shallow Concentrated Flow:			
Length = 758	Slope(ft/ft) = 0.031	Velocity (fps) = 2.82 *(unpaved)*	**0.075** *hr*
Channel Flow:			
Length = 346	Storm Assumed Velocity	Velocity (fps) = 10	**0.010** *hr*
Channel Flow:			
Length = 377	Slope(ft/ft) = 0.018	Velocity (fps) = 2.17	**0.048** *hr*
Shallow Concentrated Flow:			
Length = 558	Slope(ft/ft) = 0.011	Velocity (fps) = 1.67 *(unpaved)*	**0.093** *hr*

Tc = 0.37 *hr*
22.4 min

Project: Tall Oaks

Drainage Area Description:

Pre-Developed Conditions to Basin 2

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

Drainage Area = 24.31 Acres

Soil Types:

13 %	Type 'B'
51 %	Type 'C'
36 %	Type 'D'

Land Use:

Impervious	0.5 acres	2 %
Brush (Good)	4.11 acres	17 %
Woods (Good)	15.66 acres	64 %
Meadow	4.04 acres	17 %

Composite Runoff Curve Number:

Ground Cover	Soil Type	CN	Soil Type %	Land Use %	CN*Soil %*Land %
Impervious	B	98	13	2	0.3
	C	98	51	2	1.0
	D	98	36	2	0.7
Brush (Good)	B	48	13	17	1.1
	C	65	51	17	5.6
	D	73	36	17	4.4
Woods (Good)	B	55	13	64	4.6
	C	70	51	64	23.1
	D	77	36	64	17.7
Meadow	B	58	13	17	1.3
	C	71	51	17	6.1
	D	78	36	17	4.6

Composite CN = 70.5

Time of Concentration

Sheet Flow:

Length = 100 Slope(ft/ft) = 0.041 Manning's, n = 0.24 *(light underbrush)*

Tc

0.189 *hr*

Shallow Concentrated Flow:

Length = 734 Slope(ft/ft) = 0.062 Velocity (fps) = 4.03 *(unpaved)*

0.051 *hr*

Tc = 0.24 ***hr***

14.4 min

Project: **Tall Oaks**

Drainage Area Description:

Pre-Developed On-Site Conditions to Basin 3

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

Drainage Area = 16.16 Acres

Soil Types:

38 %	Type 'C'
62 %	Type 'D'

Land Use:

Impervious	0.74 acres	5 %
Woods (Good)	15.42 acres	95 %

Composite Runoff Curve Number:

Ground Cover	Soil Type	CN	Soil Type %	Land Use %	CN*Soil %*Land %
Impervious	C	98	38	5	1.7
	D	98	62	5	2.8
Woods (Good)	C	70	38	95	25.7
	D	77	62	95	45.2

Composite CN = 75.4

Time of Concentration

Sheet Flow: — **Tc**

Length = 100 Slope(ft/ft) = 0.071 Manning's, n = 0.24 *(light underbrush)* — **0.151** *hr*

Shallow Concentrated Flow:

Length = 693 Slope(ft/ft) = 0.054 Velocity (fps) = 3.74 *(unpaved)* — **0.052** *hr*

Channel Flow:

Length = 369 Slope(ft/ft) 0.0379 Velocity (fps) = 3.14 — **0.033** *hr*

Shallow Concentrated Flow:

Length = 134 Slope(ft/ft) = 0.015 Velocity (fps) = 1.98 *(unpaved)* — **0.019** *hr*

Tc = 0.25 ***hr***

15.3 min

Project: Tall Oaks

Drainage Area Description:

Pre-Developed On-Site Conditions to Basin 4

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

Drainage Area = 8.14 Acres

Soil Types:

61 %	Type 'C'
39 %	Type 'D'

Land Use:

Impervious	0.72 acres	9 %
Woods (Good)	7.02 acres	86 %
Brush (Good)	0.40 acres	5 %

Composite Runoff Curve Number:

Ground Cover	Soil Type	CN	Soil Type %	Land Use %	CN*Soil %*Land %
Impervious	C	98	61	9	5.3
	D	98	39	9	3.4
Woods (Good)	C	70	61	86	36.8
	D	77	39	86	25.9
Brush (Good)	C	65	61	5	1.9
	D	73	39	5	1.4

Composite CN = 74.7

Time of Concentration

			Tc
Sheet Flow:			
Length = 100	Slope(ft/ft) = 0.061	Manning's, n = 0.24 *(light underbrush)*	**0.161** *hr*
Shallow Concentrated Flow:			
Length = 240	Slope(ft/ft) = 0.072	Velocity (fps) = 4.34 *(unpaved)*	**0.015** *hr*
Channel Flow:			
Length = 158	Slope(ft/ft) 0.0503	Velocity (fps) = 3.616	**0.012** *hr*
Shallow Concentrated Flow:			
Length = 249	Slope(ft/ft) = 0.004	Velocity (fps) = 1.07 *(unpaved)*	**0.064** *hr*

Tc = 0.25 *hr*

15.2 min

Project: Tall Oaks

Drainage Area Description:

Post-Developed Conditions to Basin 1

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

Drainage Area = 39.75 Acres

Soil Types:

54 %	Type 'B'
21 %	Type 'C'
25 %	Type 'D'

Land Use:

1/4 Acre Residential Lots(12,600 SF min.)	6.51 acres	16 %
1/4 Acre Residential Lots(9,100 SF min.)	12.52 acres	31 %
1/3 Acre Residential Lots	5.45 acres	14 %
Open Space (Good)	15.27 acres	38 %

Composite Runoff Curve Number:

Ground Cover	Soil Type	CN	Soil Type %	Land Use %	CN*Soil %*Land %
1/4 Acre Residential Lots(12,600 SF min.)	B	74	54	16	6.6
(CN Adjusted for 12,600 SF)	C	82	21	16	2.8
	D	87	25	16	3.6
1/4 Acre Residential Lots(9,100 SF min.)	B	78	54	31	13.3
(CN Adjusted for 9,100 SF)	C	85	21	31	5.5
	D	89	25	31	7.1
1/3 Acre Residential Lots	B	72	54	14	5.3
	C	81	21	14	2.3
	D	86	25	14	3.0
Open Space (Good)	B	61	54	38	12.7
	C	74	21	38	5.9
	D	80	25	38	7.7

Composite CN = 75.7

Time of Concentration:

Assumed 13.5 Minutes for Bigger Drainage Area

Tc = 0.23 *hr*

13.5 min

Project: **Tall Oaks**

Drainage Area Description:

Post-Developed On-Site Conditions to Basin 2

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

Drainage Area = 23.89 Acres

Soil Types:

12 %	Type 'B'
48 %	Type 'C'
39 %	Type 'D'

Land Use:

1/4 Acre Residential Lots	13.81 acres	58 %
Open Space (Good)	10.08 acres	42 %

Composite Runoff Curve Number:

Ground Cover	Soil Type	CN	Soil Type %	Land Use %	CN*Soil %*Land %
1/4 Acre Residential Lots	B	79	12	58	5.5
(CN Adjusted for 8,450 sf Lots)	C	86	48	58	24.1
	D	89	39	58	20.3
Open Space (Good)	B	61	12	42	3.1
	C	74	48	42	15.1
	D	80	39	42	13.3

Composite CN = 81.5

Time of Concentration:

Assumed 10 Minutes for Worst Case Scenario

Tc = 0.17 *hr*

10.0 min

Project: **Tall Oaks**

Drainage Area Description:

Post-Developed On-Site Conditions to Basin 3

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

Drainage Area = 15.17 Acres

Soil Types:

40 %	Type 'C'
60 %	Type 'D'

Land Use:

1/4 Acre Residential Lots	11.00 acres	73 %
Open Space (Good)	4.17 acres	27 %

Composite Runoff Curve Number:

Ground Cover	Soil Type	CN	Soil Type %	Land Use %	CN*Soil %*Land %
1/4 Acre Residential Lots	C	86	40	73	25.1
(CN Adjusted for 8,450 sf Lots)	D	89	60	73	38.6
Open Space (Good)	C	74	40	27	8.2
	D	80	60	27	13.1

Composite CN = 85.0

Time of Concentration:

Assumed 10 Minutes for Worst Case Scenario

Tc = 0.17 *hr*

10.0 min

Project: **Tall Oaks**

Drainage Area Description:

Post-Developed On-Site Conditions to Basin 4

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

Drainage Area = 10.03 Acres

Soil Types:

63 %	Type 'C'
37 %	Type 'D'

Land Use:

1/4 Acre Residential Lots	4.80 acres	48 %
Open Space (Good)	5.23 acres	52 %

Composite Runoff Curve Number:

Ground Cover	Soil Type	CN	Soil Type %	Land Use %	CN*Soil %*Land %
1/4 Acre Residential Lots	C	86	63	48	25.7
(CN adjusted for 8,450 sf Lots)	D	89	37	48	16.0
Open Space (Good)	C	74	63	52	24.1
	D	80	37	52	15.6

Composite CN = 81.5

Time of Concentration:

Assumed 10 Minutes for Worst Case Scenario

Tc = 0.17 *hr*

10.0 min

Project: **Tall Oaks**

Drainage Area Description:

Off-Site Conditions to Basin 1

Job #: 24-0202
Initials: JMW
Check: JAB
Date: 9/8/2025

Drainage Area = 24.45 Acres

Soil Types:

55 %	Type 'C'
45 %	Type 'D'

Land Use:

Woods (Good)	1.97 acres	8 %
Open Space (Good)	16.35 acres	67 %
Impervious	5.8 acres	24 %
Brush (Good)	0.33 acres	1 %

Composite Runoff Curve Number:

Ground Cover	Soil Type	CN	Soil Type %	Land Use %	CN*Soil %*Land %
Woods (Good)	C	70	55	8	3.1
	D	77	45	8	2.8
Open Space (Good)	C	74	55	67	27.0
	D	80	45	67	24.3
Impervious	C	98	55	24	12.7
	D	98	45	24	10.5
Brush (Good)	C	65	55	1	0.5
	D	73	45	1	0.4

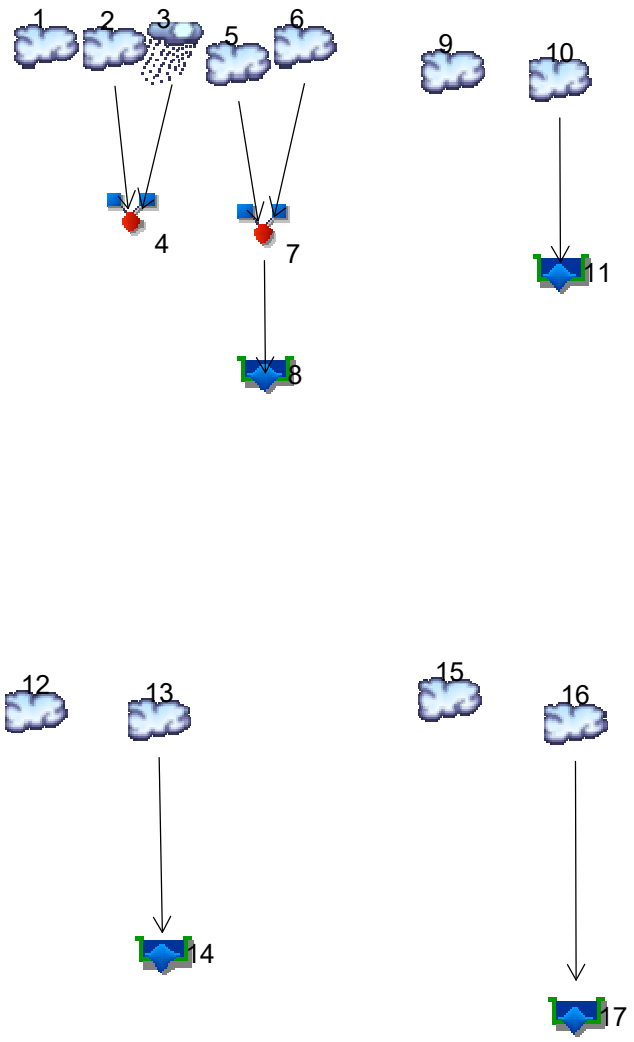
Composite CN = 81.4

Time of Concentration

			Tc
Sheet Flow:			
Length = 100	Slope(ft/ft) = 0.096	Manning's, n = 0.24 *(light underbrush)*	**0.134** *hr*
Shallow Concentrated Flow:			
Length = 225	Slope(ft/ft) = 0.064	Velocity (fps) = 4.07 *(unpaved)*	**0.015** *hr*
Channel Flow:			
Length = 1019	Storm Assumed Velocity	Velocity (fps) = 10	**0.028** *hr*
Shallow Concentrated Flow:			
Length = 625	Slope(ft/ft) = 0.029	Velocity (fps) = 2.73 *(unpaved)*	**0.064** *hr*
Channel Flow:			
Length = 346	Storm Assumed Velocity	Velocity (fps) = 10	**0.010** *hr*
Channel Flow:			
Length = 377	Slope(ft/ft) = 0.018	Velocity (fps) = 2.17	**0.048** *hr*
Shallow Concentrated Flow:			
Length = 558	Slope(ft/ft) = 0.011	Velocity (fps) = 1.67 *(unpaved)*	**0.093** *hr*

Tc = 0.39 *hr*
23.5 min

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Basin 1 Pre-Developed On-Site
2	SCS Runoff	Basin 1 Off-Site Pre-Developed
3	Manual	Basin 1 Pre-Developed Allowable
4	Combine	Basin 1 Pre-Developed Combined Allowable
5	SCS Runoff	Basin 1 Off-Site Post-Developed
6	SCS Runoff	Basin 1 On-Site Post-Developed
7	Combine	Basin 1 Combined
8	Reservoir	Pond 1
9	SCS Runoff	Basin 2 Pre-Developed On-Site
10	SCS Runoff	Basin 2 Post-Developed On-Site
11	Reservoir	Pond 2
12	SCS Runoff	Basin 3 Pre-Developed On-Site
13	SCS Runoff	Basin 3 Post-Developed On-Site
14	Reservoir	Pond 3
15	SCS Runoff	Basin 4 Pre-Developed On-Site
16	SCS Runoff	Basin 4 Post-Developed On-Site
17	Reservoir	Pond 4

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	1.550	9.172	-------	21.89	34.57	52.75	62.48	76.12	Basin 1 Pre-Developed On-Site
2	SCS Runoff	------	17.07	29.50	-------	43.13	54.28	68.81	76.17	86.13	Basin 1 Off-Site Pre-Developed
3	Manual	------	1.550	1.550	-------	1.550	1.550	1.550	62.48	76.12	Basin 1 Pre-Developed Allowable
4	Combine	2, 3	18.40	30.83	-------	44.28	55.43	69.96	138.65	162.25	Basin 1 Pre-Developed Combined All
5	SCS Runoff	------	20.52	35.34	-------	51.53	64.76	81.98	90.70	102.48	Basin 1 Off-Site Post-Developed
6	SCS Runoff	------	22.73	44.75	-------	69.83	91.19	119.60	134.17	154.03	Basin 1 On-Site Post-Developed
7	Combine	5, 6	43.10	80.09	-------	121.09	155.10	199.86	222.68	253.66	Basin 1 Combined
8	Reservoir	7	7.430	18.38	-------	33.14	46.24	65.28	84.05	114.17	Pond 1
9	SCS Runoff	------	7.472	18.69	-------	32.00	43.48	59.33	67.64	79.07	Basin 2 Pre-Developed On-Site
10	SCS Runoff	------	25.58	43.43	-------	63.01	78.97	99.72	110.20	124.36	Basin 2 Post-Developed On-Site
11	Reservoir	10	1.027	2.230	-------	3.803	5.269	7.337	9.992	17.39	Pond 2
12	SCS Runoff	------	11.00	20.47	-------	31.22	40.19	52.03	58.07	66.27	Basin 3 Pre-Developed On-Site
13	SCS Runoff	------	20.50	32.95	-------	46.00	56.45	69.88	76.62	85.69	Basin 3 Post-Developed On-Site
14	Reservoir	13	4.954	7.035	-------	8.662	9.753	22.93	30.58	41.65	Pond 3
15	SCS Runoff	------	4.211	8.579	-------	13.56	17.86	23.59	26.54	30.57	Basin 4 Pre-Developed On-Site
16	SCS Runoff	------	10.74	18.23	-------	26.45	33.16	41.86	46.27	52.21	Basin 4 Post-Developed On-Site
17	Reservoir	16	0.617	1.368	-------	2.406	3.316	10.12	15.14	22.28	Pond 4

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Pond No. 1 - Pond 1

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 631.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	631.00	48,385	0	0
1.00	632.00	54,388	51,387	51,387
2.00	633.00	60,539	57,464	108,850
3.00	634.00	66,839	63,689	172,539
4.00	635.00	73,290	70,065	242,604
5.00	636.00	79,888	76,589	319,193
6.00	637.00	86,637	83,263	402,455
7.00	638.00	93,535	90,086	492,541

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 54.00	Inactive	0.00	0.00
Span (in)	= 54.00	6.13	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 626.00	631.00	0.00	0.00
Length (ft)	= 70.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 18.00	3.00	100.00	0.00
Crest El. (ft)	= 635.30	631.90	636.00	0.00
Weir Coeff.	= 3.33	3.33	2.60	3.33
Weir Type	= Rect	Rect	Broad	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	631.00	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.10	5,139	631.10	104.39 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.20	10,277	631.20	104.39 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.30	15,416	631.30	104.39 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.40	20,555	631.40	104.39 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.50	25,693	631.50	104.39 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.60	30,832	631.60	104.39 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.70	35,971	631.70	104.39 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.80	41,109	631.80	104.39 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.90	46,248	631.90	104.39 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
1.00	51,387	632.00	104.39 oc	0.00	---	---	0.00	0.32	0.00	---	---	---	0.316
1.10	57,133	632.10	104.39 oc	0.00	---	---	0.00	0.89	0.00	---	---	---	0.893
1.20	62,879	632.20	104.39 oc	0.00	---	---	0.00	1.64	0.00	---	---	---	1.641
1.30	68,626	632.30	104.39 oc	0.00	---	---	0.00	2.53	0.00	---	---	---	2.526
1.40	74,372	632.40	104.39 oc	0.00	---	---	0.00	3.53	0.00	---	---	---	3.531
1.50	80,118	632.50	104.39 oc	0.00	---	---	0.00	4.64	0.00	---	---	---	4.641
1.60	85,865	632.60	104.39 oc	0.00	---	---	0.00	5.85	0.00	---	---	---	5.849
1.70	91,611	632.70	104.39 oc	0.00	---	---	0.00	7.15	0.00	---	---	---	7.146
1.80	97,357	632.80	104.39 oc	0.00	---	---	0.00	8.53	0.00	---	---	---	8.526
1.90	103,104	632.90	104.39 oc	0.00	---	---	0.00	9.99	0.00	---	---	---	9.986
2.00	108,850	633.00	104.39 oc	0.00	---	---	0.00	11.52	0.00	---	---	---	11.52
2.10	115,219	633.10	104.39 oc	0.00	---	---	0.00	13.13	0.00	---	---	---	13.13
2.20	121,588	633.20	104.39 oc	0.00	---	---	0.00	14.81	0.00	---	---	---	14.81
2.30	127,957	633.30	104.39 oc	0.00	---	---	0.00	16.55	0.00	---	---	---	16.55
2.40	134,326	633.40	104.39 oc	0.00	---	---	0.00	18.35	0.00	---	---	---	18.35
2.50	140,695	633.50	104.39 oc	0.00	---	---	0.00	20.22	0.00	---	---	---	20.22
2.60	147,063	633.60	104.39 oc	0.00	---	---	0.00	22.14	0.00	---	---	---	22.14
2.70	153,432	633.70	104.39 oc	0.00	---	---	0.00	24.12	0.00	---	---	---	24.12
2.80	159,801	633.80	104.39 oc	0.00	---	---	0.00	26.16	0.00	---	---	---	26.16
2.90	166,170	633.90	104.39 oc	0.00	---	---	0.00	28.25	0.00	---	---	---	28.25
3.00	172,539	634.00	104.39 oc	0.00	---	---	0.00	30.40	0.00	---	---	---	30.40
3.10	179,546	634.10	104.39 oc	0.00	---	---	0.00	32.60	0.00	---	---	---	32.60
3.20	186,552	634.20	104.39 oc	0.00	---	---	0.00	34.84	0.00	---	---	---	34.84
3.30	193,558	634.30	104.39 oc	0.00	---	---	0.00	37.14	0.00	---	---	---	37.14
3.40	200,565	634.40	104.39 oc	0.00	---	---	0.00	39.49	0.00	---	---	---	39.49

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Pond 1

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.50	207,571	634.50	104.39 oc	0.00	---	---	0.00	41.88	0.00	---	---	---	41.88
3.60	214,578	634.60	104.39 oc	0.00	---	---	0.00	44.32	0.00	---	---	---	44.32
3.70	221,584	634.70	104.39 oc	0.00	---	---	0.00	46.80	0.00	---	---	---	46.80
3.80	228,591	634.80	104.39 oc	0.00	---	---	0.00	49.33	0.00	---	---	---	49.33
3.90	235,597	634.90	104.39 oc	0.00	---	---	0.00	51.90	0.00	---	---	---	51.90
4.00	242,604	635.00	104.39 oc	0.00	---	---	0.00	54.53	0.00	---	---	---	54.53
4.10	250,262	635.10	104.39 oc	0.00	---	---	0.00	57.18	0.00	---	---	---	57.18
4.20	257,921	635.20	104.39 oc	0.00	---	---	0.00	59.89	0.00	---	---	---	59.89
4.30	265,580	635.30	104.39 oc	0.00	---	---	0.00	62.63	0.00	---	---	---	62.63
4.40	273,239	635.40	104.39 oc	0.00	---	---	1.89	65.41	0.00	---	---	---	67.30
4.50	280,898	635.50	104.39 oc	0.00	---	---	5.36	68.23	0.00	---	---	---	73.59
4.60	288,557	635.60	104.39 oc	0.00	---	---	9.84	71.09	0.00	---	---	---	80.94
4.70	296,216	635.70	104.39 oc	0.00	---	---	15.15	74.00	0.00	---	---	---	89.15
4.80	303,875	635.80	104.39 oc	0.00	---	---	21.18	76.94	0.00	---	---	---	98.12
4.90	311,534	635.90	107.76 oc	0.00	---	---	27.84	79.91	0.00	---	---	---	107.76
5.00	319,193	636.00	118.04 oc	0.00	---	---	35.11	82.93	0.00	---	---	---	118.04
5.10	327,519	636.10	128.88 oc	0.00	---	---	42.89	85.99	8.22	---	---	---	137.09
5.20	335,845	636.20	140.19 oc	0.00	---	---	51.17	89.01 s	23.25	---	---	---	163.43
5.30	344,171	636.30	151.10 oc	0.00	---	---	59.93	91.17 s	42.71	---	---	---	193.81
5.40	352,498	636.40	161.65 ic	0.00	---	---	69.14	92.50 s	65.75	---	---	---	227.40
5.50	360,824	636.50	171.05 ic	0.00	---	---	78.78	92.27 s	91.89	---	---	---	262.94
5.60	369,150	636.60	179.90 ic	0.00	---	---	88.83	91.07 s	120.79	---	---	---	300.69
5.70	377,476	636.70	188.19 ic	0.00	---	---	99.27	88.92 s	152.22	---	---	---	340.41
5.80	385,803	636.80	195.91 ic	0.00	---	---	110.10	85.81 s	185.97	---	---	---	381.88
5.90	394,129	636.90	203.01 ic	0.00	---	---	121.29	81.72 s	221.91	---	---	---	424.92
6.00	402,455	637.00	207.80 ic	0.00	---	---	128.67 s	79.13 s	260.00	---	---	---	467.80
6.10	411,464	637.10	211.45 ic	0.00	---	---	134.03 s	77.42 s	299.95	---	---	---	511.40
6.20	420,472	637.20	214.61 ic	0.00	---	---	138.61 s	75.99 s	341.76	---	---	---	556.36
6.30	429,481	637.30	217.43 ic	0.00	---	---	142.69 s	74.74 s	385.35	---	---	---	602.78
6.40	438,489	637.40	220.01 ic	0.00	---	---	146.38 s	73.62 s	430.65	---	---	---	650.64
6.50	447,498	637.50	222.39 ic	0.00	---	---	149.79 s	72.59 s	477.59	---	---	---	699.98
6.60	456,507	637.60	224.61 ic	0.00	---	---	152.95 s	71.65 s	526.13	---	---	---	750.73
6.70	465,515	637.70	226.70 ic	0.00	---	---	155.90 s	70.79 s	576.21	---	---	---	802.90
6.80	474,524	637.80	228.68 ic	0.00	---	---	158.69 s	69.98 s	627.79	---	---	---	856.46
6.90	483,532	637.90	230.57 ic	0.00	---	---	161.32 s	69.24 s	680.81	---	---	---	911.38
7.00	492,541	638.00	232.38 ic	0.00	---	---	163.82 s	68.55 s	735.39	---	---	---	967.76

...End

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Pond No. 2 - Pond 2

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 633.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	633.00	43,170	0	0
1.00	634.00	47,566	45,368	45,368
2.00	635.00	52,111	49,839	95,207
3.00	636.00	56,807	54,459	149,666
4.00	637.00	61,652	59,230	208,895
5.00	638.00	66,646	64,149	273,044
6.00	639.00	71,791	69,219	342,263

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 36.00	Inactive	0.00	0.00
Span (in)	= 36.00	5.63	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 629.00	633.00	0.00	0.00
Length (ft)	= 84.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	0.50	50.00	0.00
Crest El. (ft)	= 636.40	633.60	637.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	Broad	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	633.00	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.10	4,537	633.10	53.04 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.20	9,074	633.20	53.04 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.30	13,610	633.30	53.04 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.40	18,147	633.40	53.04 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.50	22,684	633.50	53.04 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.60	27,221	633.60	53.04 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.70	31,758	633.70	53.04 oc	0.00	---	---	0.00	0.05	0.00	---	---	---	0.053
0.80	36,294	633.80	53.04 oc	0.00	---	---	0.00	0.15	0.00	---	---	---	0.149
0.90	40,831	633.90	53.04 oc	0.00	---	---	0.00	0.27	0.00	---	---	---	0.273
1.00	45,368	634.00	53.04 oc	0.00	---	---	0.00	0.42	0.00	---	---	---	0.421
1.10	50,352	634.10	53.04 oc	0.00	---	---	0.00	0.59	0.00	---	---	---	0.589
1.20	55,336	634.20	53.04 oc	0.00	---	---	0.00	0.77	0.00	---	---	---	0.774
1.30	60,320	634.30	53.04 oc	0.00	---	---	0.00	0.98	0.00	---	---	---	0.975
1.40	65,303	634.40	53.04 oc	0.00	---	---	0.00	1.19	0.00	---	---	---	1.191
1.50	70,287	634.50	53.04 oc	0.00	---	---	0.00	1.42	0.00	---	---	---	1.421
1.60	75,271	634.60	53.04 oc	0.00	---	---	0.00	1.66	0.00	---	---	---	1.665
1.70	80,255	634.70	53.04 oc	0.00	---	---	0.00	1.92	0.00	---	---	---	1.921
1.80	85,239	634.80	53.04 oc	0.00	---	---	0.00	2.19	0.00	---	---	---	2.188
1.90	90,223	634.90	53.04 oc	0.00	---	---	0.00	2.47	0.00	---	---	---	2.467
2.00	95,207	635.00	53.04 oc	0.00	---	---	0.00	2.76	0.00	---	---	---	2.758
2.10	100,652	635.10	53.04 oc	0.00	---	---	0.00	3.06	0.00	---	---	---	3.059
2.20	106,098	635.20	53.04 oc	0.00	---	---	0.00	3.37	0.00	---	---	---	3.370
2.30	111,544	635.30	53.04 oc	0.00	---	---	0.00	3.69	0.00	---	---	---	3.690
2.40	116,990	635.40	53.04 oc	0.00	---	---	0.00	4.02	0.00	---	---	---	4.021
2.50	122,436	635.50	53.04 oc	0.00	---	---	0.00	4.36	0.00	---	---	---	4.360
2.60	127,882	635.60	53.04 oc	0.00	---	---	0.00	4.71	0.00	---	---	---	4.709
2.70	133,328	635.70	53.04 oc	0.00	---	---	0.00	5.07	0.00	---	---	---	5.066
2.80	138,774	635.80	53.04 oc	0.00	---	---	0.00	5.43	0.00	---	---	---	5.432
2.90	144,220	635.90	53.04 oc	0.00	---	---	0.00	5.81	0.00	---	---	---	5.807
3.00	149,666	636.00	53.04 oc	0.00	---	---	0.00	6.19	0.00	---	---	---	6.191
3.10	155,589	636.10	53.04 oc	0.00	---	---	0.00	6.58	0.00	---	---	---	6.581
3.20	161,511	636.20	53.04 oc	0.00	---	---	0.00	6.98	0.00	---	---	---	6.980
3.30	167,434	636.30	53.04 oc	0.00	---	---	0.00	7.39	0.00	---	---	---	7.387
3.40	173,357	636.40	53.04 oc	0.00	---	---	0.00	7.80	0.00	---	---	---	7.801
3.50	179,280	636.50	53.04 oc	0.00	---	---	1.26	8.22	0.00	---	---	---	9.483

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Pond 2

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.60	185,203	636.60	53.04 oc	0.00	---	---	3.57	8.65	0.00	---	---	---	12.22
3.70	191,126	636.70	53.04 oc	0.00	---	---	6.56	9.09	0.00	---	---	---	15.65
3.80	197,049	636.80	53.04 oc	0.00	---	---	10.10	9.53	0.00	---	---	---	19.63
3.90	202,972	636.90	53.04 oc	0.00	---	---	14.12	9.98	0.00	---	---	---	24.10
4.00	208,895	637.00	53.04 oc	0.00	---	---	18.57	10.44	0.00	---	---	---	29.01
4.10	215,310	637.10	53.04 oc	0.00	---	---	23.40	10.90	5.26	---	---	---	39.57
4.20	221,725	637.20	53.04 oc	0.00	---	---	28.59	11.37	14.89	---	---	---	54.86
4.30	228,140	637.30	53.04 oc	0.00	---	---	34.11	11.85	27.35	---	---	---	73.31
4.40	234,555	637.40	53.04 oc	0.00	---	---	39.95	12.33	42.11	---	---	---	94.39
4.50	240,970	637.50	58.92 ic	0.00	---	---	46.09	12.82	58.85	---	---	---	117.76
4.60	247,384	637.60	65.53 ic	0.00	---	---	52.52	13.01 s	77.37	---	---	---	142.90
4.70	253,799	637.70	71.94 ic	0.00	---	---	59.22	12.73 s	97.48	---	---	---	169.42
4.80	260,214	637.80	78.16 ic	0.00	---	---	66.18	11.98 s	119.09	---	---	---	197.25
4.90	266,629	637.90	83.53 ic	0.00	---	---	72.71 s	10.81 s	142.11	---	---	---	225.64
5.00	273,044	638.00	85.92 ic	0.00	---	---	75.57 s	10.35 s	166.50	---	---	---	252.42
5.10	279,966	638.10	87.71 ic	0.00	---	---	77.69 s	10.02 s	192.08	---	---	---	279.79
5.20	286,888	638.20	89.20 ic	0.00	---	---	79.46 s	9.75 s	218.87	---	---	---	308.08
5.30	293,810	638.30	90.51 ic	0.00	---	---	81.00 s	9.51 s	246.77	---	---	---	337.28
5.40	300,731	638.40	91.69 ic	0.00	---	---	82.38 s	9.30 s	275.78	---	---	---	367.46
5.50	307,653	638.50	92.76 ic	0.00	---	---	83.64 s	9.12 s	305.84	---	---	---	398.60
5.60	314,575	638.60	93.75 ic	0.00	---	---	84.80 s	8.95 s	336.95	---	---	---	430.69
5.70	321,497	638.70	94.68 ic	0.00	---	---	85.88 s	8.80 s	369.00	---	---	---	463.67
5.80	328,419	638.80	95.55 ic	0.00	---	---	86.89 s	8.66 s	402.02	---	---	---	497.57
5.90	335,341	638.90	96.39 ic	0.00	---	---	87.85 s	8.53 s	435.98	---	---	---	532.37
6.00	342,263	639.00	97.18 ic	0.00	---	---	88.77 s	8.41 s	470.93	---	---	---	568.11

...End

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Pond No. 3 - Pond 3

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 654.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	654.00	18,576	0	0
1.00	655.00	21,727	20,152	20,152
2.00	656.00	25,029	23,378	43,530
3.00	657.00	28,480	26,755	70,284
4.00	658.00	32,081	30,281	100,565
5.00	659.00	35,831	33,956	134,521
6.00	660.00	39,731	37,781	172,302

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 36.00	Inactive	6.00	0.00
Span (in)	= 36.00	3.50	33.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 651.00	654.00	654.90	0.00
Length (ft)	= 80.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 16.00	50.00	0.00	0.00
Crest El. (ft)	= 657.30	658.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	3.33	3.33
Weir Type	= Rect	Broad	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Wet area)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	654.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.10	2,015	654.10	35.22 oc	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.20	4,030	654.20	35.22 oc	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.30	6,045	654.30	35.22 oc	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.40	8,061	654.40	35.22 oc	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.50	10,076	654.50	35.22 oc	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.60	12,091	654.60	35.22 oc	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.70	14,106	654.70	35.22 oc	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.80	16,121	654.80	35.22 oc	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
0.90	18,136	654.90	35.22 oc	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.00	20,152	655.00	35.22 oc	0.00	0.30 ic	---	0.00	0.00	---	---	---	---	0.296
1.10	22,489	655.10	35.22 oc	0.00	0.84 ic	---	0.00	0.00	---	---	---	---	0.837
1.20	24,827	655.20	35.22 oc	0.00	1.54 ic	---	0.00	0.00	---	---	---	---	1.538
1.30	27,165	655.30	35.22 oc	0.00	2.37 ic	---	0.00	0.00	---	---	---	---	2.368
1.40	29,503	655.40	35.22 oc	0.00	3.31 ic	---	0.00	0.00	---	---	---	---	3.309
1.50	31,841	655.50	35.22 oc	0.00	3.92 ic	---	0.00	0.00	---	---	---	---	3.916
1.60	34,178	655.60	35.22 oc	0.00	4.44 ic	---	0.00	0.00	---	---	---	---	4.441
1.70	36,516	655.70	35.22 oc	0.00	4.91 ic	---	0.00	0.00	---	---	---	---	4.909
1.80	38,854	655.80	35.22 oc	0.00	5.34 ic	---	0.00	0.00	---	---	---	---	5.337
1.90	41,192	655.90	35.22 oc	0.00	5.73 ic	---	0.00	0.00	---	---	---	---	5.733
2.00	43,530	656.00	35.22 oc	0.00	6.10 ic	---	0.00	0.00	---	---	---	---	6.104
2.10	46,205	656.10	35.22 oc	0.00	6.45 ic	---	0.00	0.00	---	---	---	---	6.453
2.20	48,880	656.20	35.22 oc	0.00	6.78 ic	---	0.00	0.00	---	---	---	---	6.784
2.30	51,556	656.30	35.22 oc	0.00	7.10 ic	---	0.00	0.00	---	---	---	---	7.099
2.40	54,231	656.40	35.22 oc	0.00	7.40 ic	---	0.00	0.00	---	---	---	---	7.402
2.50	56,907	656.50	35.22 oc	0.00	7.69 ic	---	0.00	0.00	---	---	---	---	7.692
2.60	59,582	656.60	35.22 oc	0.00	7.97 ic	---	0.00	0.00	---	---	---	---	7.972
2.70	62,258	656.70	35.22 oc	0.00	8.24 ic	---	0.00	0.00	---	---	---	---	8.242
2.80	64,933	656.80	35.22 oc	0.00	8.50 ic	---	0.00	0.00	---	---	---	---	8.504
2.90	67,609	656.90	35.22 oc	0.00	8.76 ic	---	0.00	0.00	---	---	---	---	8.758
3.00	70,284	657.00	35.22 oc	0.00	9.00 ic	---	0.00	0.00	---	---	---	---	9.005
3.10	73,312	657.10	35.22 oc	0.00	9.25 ic	---	0.00	0.00	---	---	---	---	9.245
3.20	76,340	657.20	35.22 oc	0.00	9.48 ic	---	0.00	0.00	---	---	---	---	9.479
3.30	79,368	657.30	35.22 oc	0.00	9.71 ic	---	0.00	0.00	---	---	---	---	9.707
3.40	82,396	657.40	35.22 oc	0.00	9.93 ic	---	1.68	0.00	---	---	---	---	11.61
3.50	85,424	657.50	35.22 oc	0.00	10.15 ic	---	4.76	0.00	---	---	---	---	14.91

Continues on next page...

Pond 3

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.60	88,452	657.60	35.22 oc	0.00	10.36 ic	---	8.75	0.00	---	---	---	---	19.11
3.70	91,480	657.70	35.22 oc	0.00	10.57 ic	---	13.47	0.00	---	---	---	---	24.04
3.80	94,508	657.80	35.22 oc	0.00	10.78 ic	---	18.83	0.00	---	---	---	---	29.60
3.90	97,536	657.90	35.73 oc	0.00	10.98 ic	---	24.75	0.00	---	---	---	---	35.73
4.00	100,565	658.00	42.38 oc	0.00	11.18 ic	---	31.20	0.00	---	---	---	---	42.38
4.10	103,960	658.10	49.50 oc	0.00	11.37 ic	---	38.12	4.11	---	---	---	---	53.60
4.20	107,356	658.20	56.80 ic	0.00	11.30 ic	---	45.49	11.63	---	---	---	---	68.42
4.30	110,751	658.30	63.38 ic	0.00	10.11 ic	---	53.28	21.35	---	---	---	---	84.74
4.40	114,147	658.40	70.01 ic	0.00	8.55 ic	---	61.46	32.88	---	---	---	---	102.89
4.50	117,543	658.50	75.68 ic	0.00	6.80 ic	---	68.88 s	45.95	---	---	---	---	121.62
4.60	120,938	658.60	78.07 ic	0.00	6.06 ic	---	72.02 s	60.41	---	---	---	---	138.48
4.70	124,334	658.70	79.86 ic	0.00	5.51 ic	---	74.35 s	76.11	---	---	---	---	155.97
4.80	127,729	658.80	81.35 ic	0.00	5.06 ic	---	76.29 s	92.99	---	---	---	---	174.34
4.90	131,125	658.90	82.65 ic	0.00	4.69 ic	---	77.96 s	110.96	---	---	---	---	193.61
5.00	134,521	659.00	83.82 ic	0.00	4.36 ic	---	79.45 s	130.00	---	---	---	---	213.81
5.10	138,299	659.10	84.88 ic	0.00	4.08 ic	---	80.80 s	149.97	---	---	---	---	234.85
5.20	142,077	659.20	85.86 ic	0.00	3.83 ic	---	82.03 s	170.89	---	---	---	---	256.75
5.30	145,855	659.30	86.79 ic	0.00	3.60 ic	---	83.18 s	192.67	---	---	---	---	279.45
5.40	149,633	659.40	87.66 ic	0.00	3.40 ic	---	84.26 s	215.32	---	---	---	---	302.98
5.50	153,411	659.50	88.50 ic	0.00	3.22 ic	---	85.27 s	238.80	---	---	---	---	327.29
5.60	157,189	659.60	89.30 ic	0.00	3.06 ic	---	86.23 s	263.08	---	---	---	---	352.37
5.70	160,967	659.70	90.08 ic	0.00	2.91 ic	---	87.16 s	288.11	---	---	---	---	378.18
5.80	164,745	659.80	90.83 ic	0.00	2.78 ic	---	88.04 s	313.89	---	---	---	---	404.71
5.90	168,523	659.90	91.56 ic	0.00	2.66 ic	---	88.88 s	340.41	---	---	---	---	431.95
6.00	172,302	660.00	92.28 ic	0.00	2.54 ic	---	89.73 s	367.70	---	---	---	---	459.96

...End

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Pond No. 4 - Pond 4

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 703.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	703.00	19,558	0	0
1.00	704.00	22,258	20,908	20,908
2.00	705.00	25,110	23,684	44,592
3.00	706.00	28,113	26,612	71,204
4.00	707.00	31,265	29,689	100,893
5.00	708.00	34,569	32,917	133,810

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 36.00	Inactive	0.00	0.00
Span (in)	= 36.00	3.38	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 699.00	703.00	0.00	0.00
Length (ft)	= 80.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 12.00	0.42	50.00	0.00
Crest El. (ft)	= 705.40	703.60	706.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	Broad	---
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	703.00	0.00	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.10	2,091	703.10	52.83 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.20	4,182	703.20	52.83 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.30	6,272	703.30	52.83 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.40	8,363	703.40	52.83 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.50	10,454	703.50	52.83 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.60	12,545	703.60	52.83 oc	0.00	---	---	0.00	0.00	0.00	---	---	---	0.000
0.70	14,636	703.70	52.83 oc	0.00	---	---	0.00	0.04	0.00	---	---	---	0.044
0.80	16,726	703.80	52.83 oc	0.00	---	---	0.00	0.12	0.00	---	---	---	0.125
0.90	18,817	703.90	52.83 oc	0.00	---	---	0.00	0.23	0.00	---	---	---	0.230
1.00	20,908	704.00	52.83 oc	0.00	---	---	0.00	0.35	0.00	---	---	---	0.354
1.10	23,276	704.10	52.83 oc	0.00	---	---	0.00	0.49	0.00	---	---	---	0.494
1.20	25,645	704.20	52.83 oc	0.00	---	---	0.00	0.65	0.00	---	---	---	0.650
1.30	28,013	704.30	52.83 oc	0.00	---	---	0.00	0.82	0.00	---	---	---	0.819
1.40	30,382	704.40	52.83 oc	0.00	---	---	0.00	1.00	0.00	---	---	---	1.001
1.50	32,750	704.50	52.83 oc	0.00	---	---	0.00	1.19	0.00	---	---	---	1.194
1.60	35,118	704.60	52.83 oc	0.00	---	---	0.00	1.40	0.00	---	---	---	1.398
1.70	37,487	704.70	52.83 oc	0.00	---	---	0.00	1.61	0.00	---	---	---	1.613
1.80	39,855	704.80	52.83 oc	0.00	---	---	0.00	1.84	0.00	---	---	---	1.838
1.90	42,224	704.90	52.83 oc	0.00	---	---	0.00	2.07	0.00	---	---	---	2.073
2.00	44,592	705.00	52.83 oc	0.00	---	---	0.00	2.32	0.00	---	---	---	2.317
2.10	47,253	705.10	52.83 oc	0.00	---	---	0.00	2.57	0.00	---	---	---	2.569
2.20	49,914	705.20	52.83 oc	0.00	---	---	0.00	2.83	0.00	---	---	---	2.831
2.30	52,575	705.30	52.83 oc	0.00	---	---	0.00	3.10	0.00	---	---	---	3.100
2.40	55,237	705.40	52.83 oc	0.00	---	---	0.00	3.38	0.00	---	---	---	3.377
2.50	57,898	705.50	52.83 oc	0.00	---	---	1.26	3.66	0.00	---	---	---	4.923
2.60	60,559	705.60	52.83 oc	0.00	---	---	3.57	3.96	0.00	---	---	---	7.527
2.70	63,220	705.70	52.83 oc	0.00	---	---	6.56	4.26	0.00	---	---	---	10.82
2.80	65,881	705.80	52.83 oc	0.00	---	---	10.10	4.56	0.00	---	---	---	14.66
2.90	68,542	705.90	52.83 oc	0.00	---	---	14.12	4.88	0.00	---	---	---	19.00
3.00	71,204	706.00	52.83 oc	0.00	---	---	18.57	5.20	0.00	---	---	---	23.77
3.10	74,172	706.10	52.83 oc	0.00	---	---	23.40	5.53	5.26	---	---	---	34.19
3.20	77,141	706.20	52.83 oc	0.00	---	---	28.59	5.86	14.89	---	---	---	49.35
3.30	80,110	706.30	52.83 oc	0.00	---	---	34.11	6.20	27.35	---	---	---	67.67
3.40	83,079	706.40	52.83 oc	0.00	---	---	39.95	6.55	42.11	---	---	---	88.61
3.50	86,048	706.50	53.00 oc	0.00	---	---	46.09	6.91	58.85	---	---	---	111.84
3.60	89,017	706.60	59.79 ic	0.00	---	---	52.52	7.27	77.37	---	---	---	137.15

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Pond 4

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.70	91,986	706.70	66.51 ic	0.00	---	---	59.22	7.29 s	97.48	---	---	---	163.99
3.80	94,955	706.80	73.06 ic	0.00	---	---	66.18	6.89 s	119.09	---	---	---	192.16
3.90	97,924	706.90	77.46 ic	0.00	---	---	71.04 s	6.42 s	142.11	---	---	---	219.57
4.00	100,893	707.00	79.70 ic	0.00	---	---	73.46 s	6.24 s	166.50	---	---	---	246.20
4.10	104,184	707.10	81.47 ic	0.00	---	---	75.37 s	6.10 s	192.08	---	---	---	273.56
4.20	107,476	707.20	82.99 ic	0.00	---	---	77.00 s	5.98 s	218.87	---	---	---	301.86
4.30	110,768	707.30	84.32 ic	0.00	---	---	78.44 s	5.88 s	246.77	---	---	---	331.09
4.40	114,059	707.40	85.53 ic	0.00	---	---	79.73 s	5.80 s	275.78	---	---	---	361.30
4.50	117,351	707.50	86.63 ic	0.00	---	---	80.91 s	5.72 s	305.84	---	---	---	392.47
4.60	120,643	707.60	87.66 ic	0.00	---	---	82.00 s	5.65 s	336.95	---	---	---	424.59
4.70	123,934	707.70	88.62 ic	0.00	---	---	83.03 s	5.58 s	369.00	---	---	---	457.61
4.80	127,226	707.80	89.52 ic	0.00	---	---	84.00 s	5.53 s	402.02	---	---	---	491.55
4.90	130,518	707.90	90.39 ic	0.00	---	---	84.92 s	5.47 s	435.98	---	---	---	526.37
5.00	133,810	708.00	91.22 ic	0.00	---	---	85.79 s	5.43 s	470.93	---	---	---	562.15

...End

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	1.550	2	740	19,842	------	------	------	Basin 1 Pre-Developed On-Site
2	SCS Runoff	17.07	2	730	65,894	------	------	------	Basin 1 Off-Site Pre-Developed
3	Manual	1.550	2	740	19,835	------	------	------	Basin 1 Pre-Developed Allowable
4	Combine	18.40	2	730	85,729	2, 3	------	------	Basin 1 Pre-Developed Combined All
5	SCS Runoff	20.52	2	726	66,940	------	------	------	Basin 1 Off-Site Post-Developed
6	SCS Runoff	22.73	2	724	71,618	------	------	------	Basin 1 On-Site Post-Developed
7	Combine	43.10	2	724	138,559	5, 6	------	------	Basin 1 Combined
8	Reservoir	7.430	2	756	133,404	7	632.72	92,793	Pond 1
9	SCS Runoff	7.472	2	724	28,816	------	------	------	Basin 2 Pre-Developed On-Site
10	SCS Runoff	25.58	2	722	67,888	------	------	------	Basin 2 Post-Developed On-Site
11	Reservoir	1.027	2	908	62,647	10	634.32	61,510	Pond 2
12	SCS Runoff	11.00	2	724	33,397	------	------	------	Basin 3 Pre-Developed On-Site
13	SCS Runoff	20.50	2	722	53,641	------	------	------	Basin 3 Post-Developed On-Site
14	Reservoir	4.954	2	736	51,619	13	655.71	36,762	Pond 3
15	SCS Runoff	4.211	2	724	13,604	------	------	------	Basin 4 Pre-Developed On-Site
16	SCS Runoff	10.74	2	722	28,502	------	------	------	Basin 4 Post-Developed On-Site
17	Reservoir	0.617	2	826	26,364	16	704.18	25,139	Pond 4

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 1

Basin 1 Pre-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	1.550 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.33 hrs
Time interval	=	2 min	Hyd. volume	=	19,842 cuft
Drainage area	=	40.220 ac	Curve number	=	62
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	22.40 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



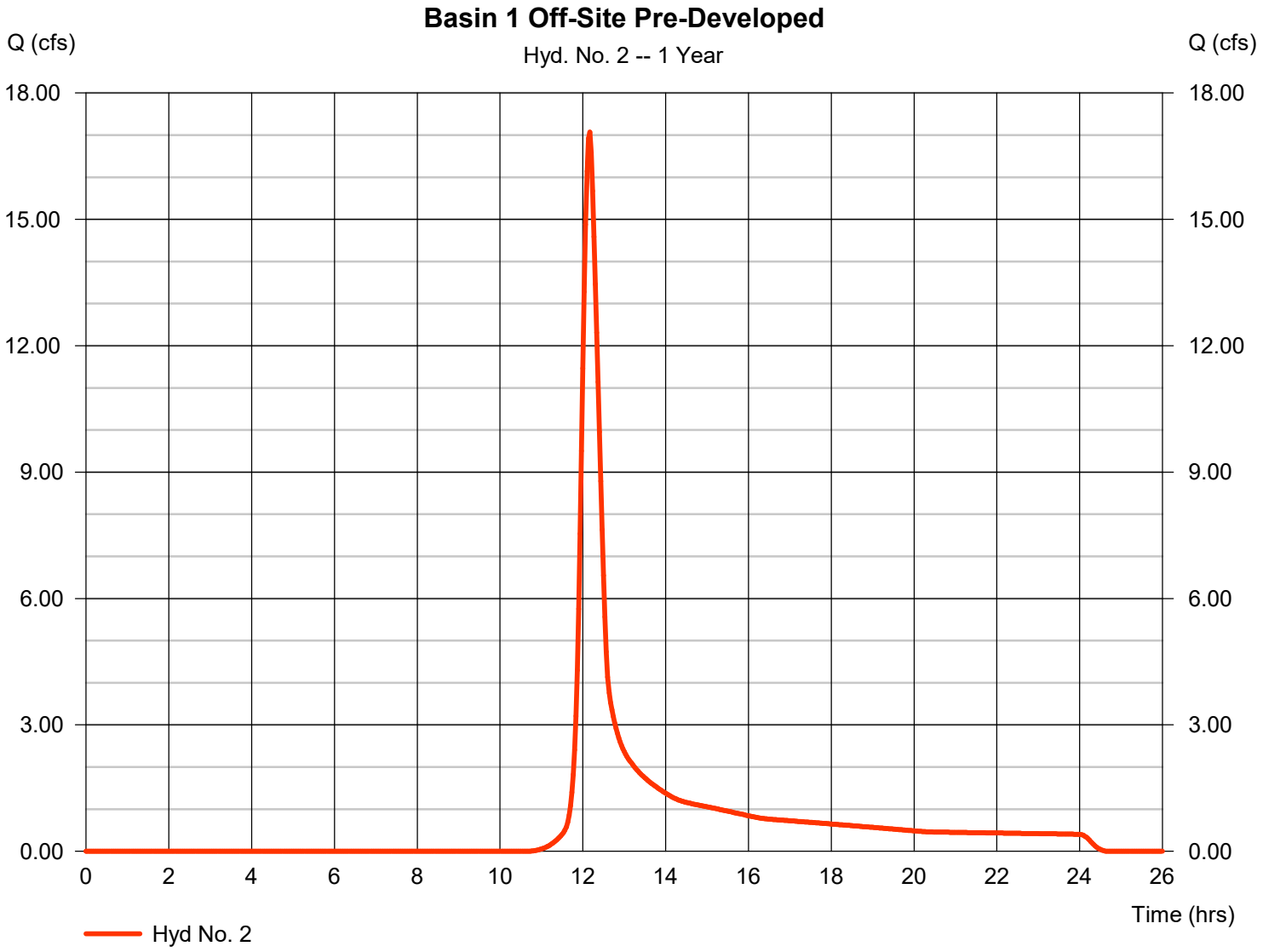
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 2

Basin 1 Off-Site Pre-Developed

Hydrograph type	=	SCS Runoff	Peak discharge	=	17.07 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.17 hrs
Time interval	=	2 min	Hyd. volume	=	65,894 cuft
Drainage area	=	24.450 ac	Curve number	=	81.4
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	23.50 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



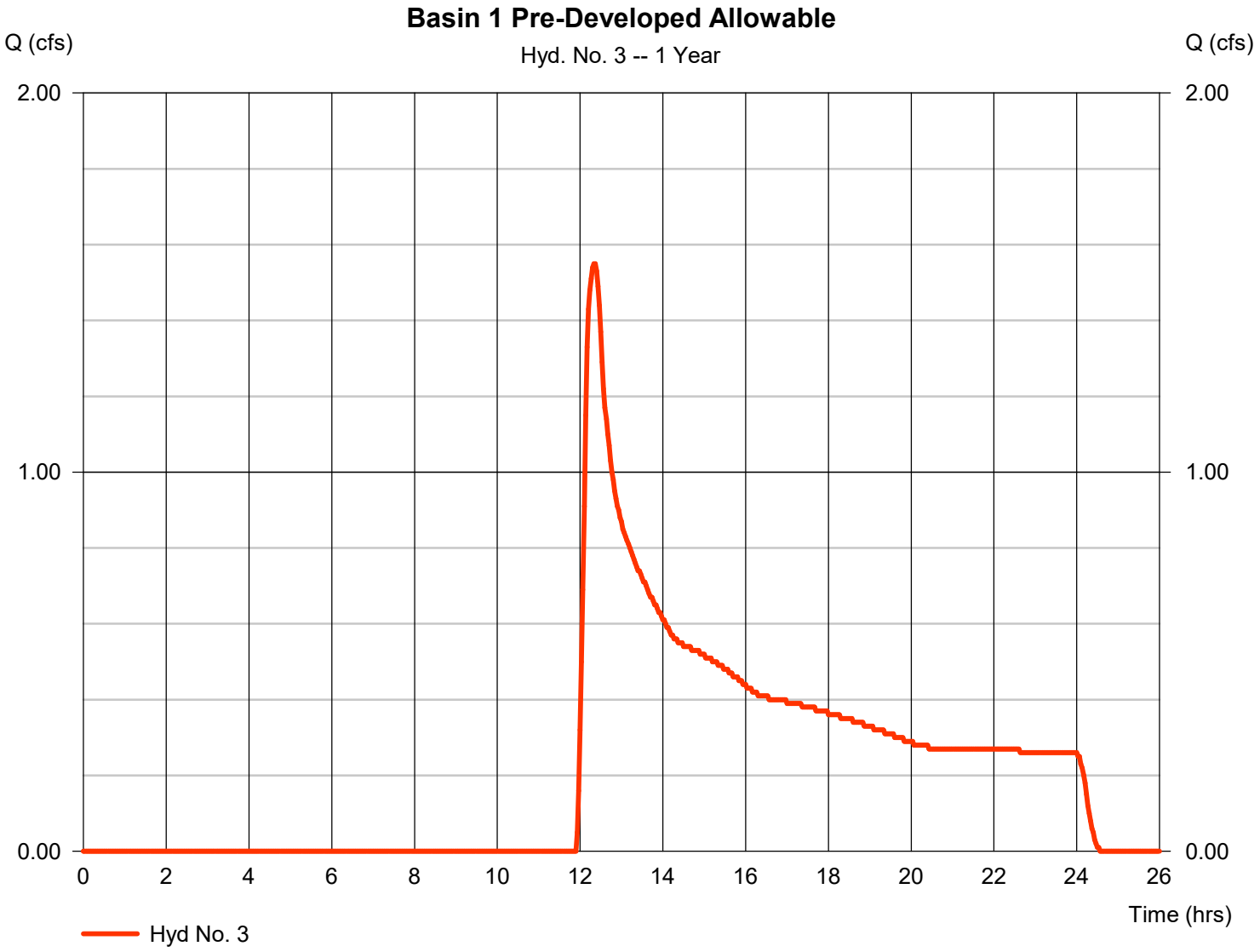
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 3

Basin 1 Pre-Developed Allowable

Hydrograph type	= Manual	Peak discharge	= 1.550 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 19,835 cuft

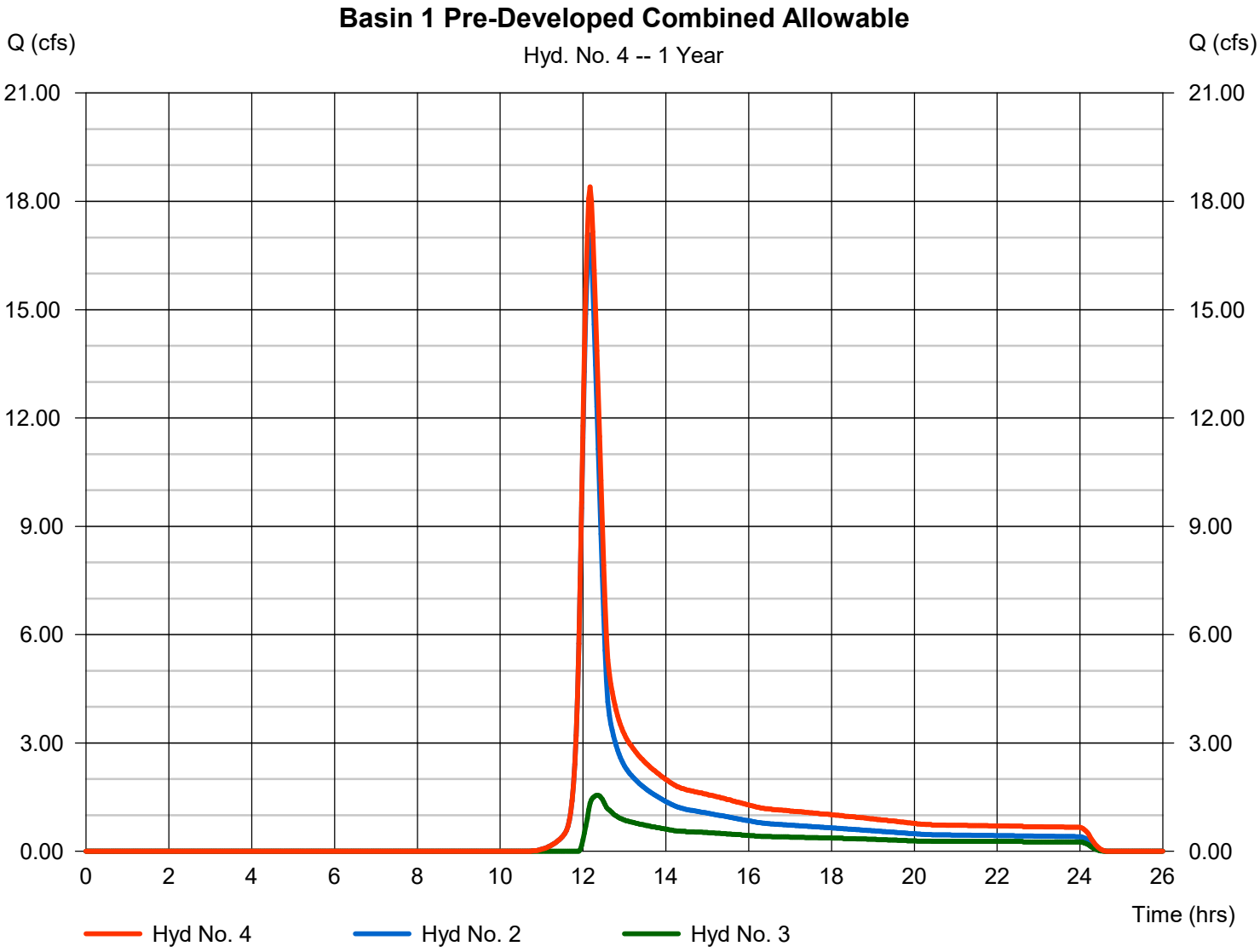


Hydrograph Report

Hyd. No. 4

Basin 1 Pre-Developed Combined Allowable

Hydrograph type	= Combine	Peak discharge	= 18.40 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 85,729 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 24.450 ac



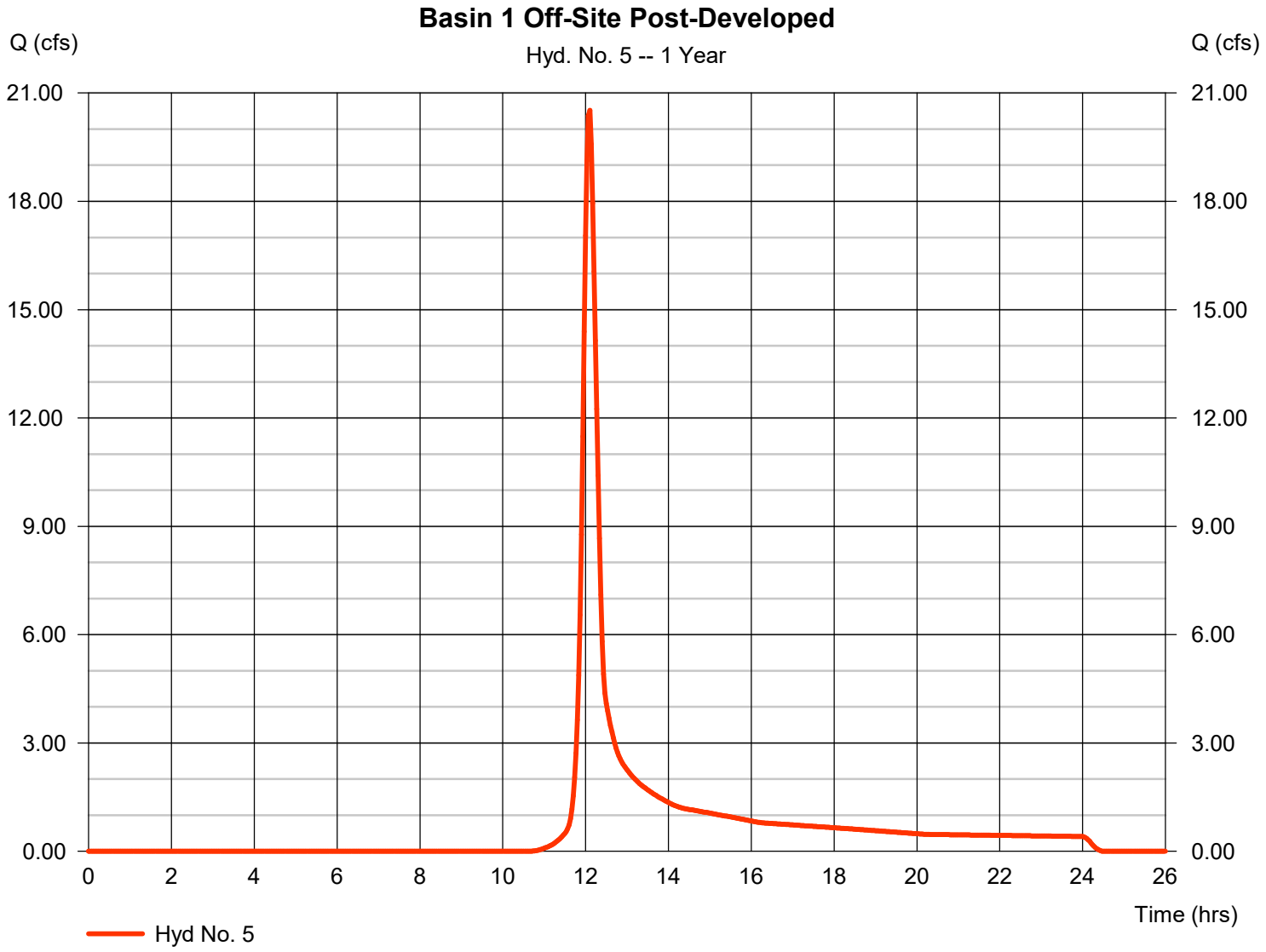
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 5

Basin 1 Off-Site Post-Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 20.52 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 66,940 cuft
Drainage area	= 24.450 ac	Curve number	= 81.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.00 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



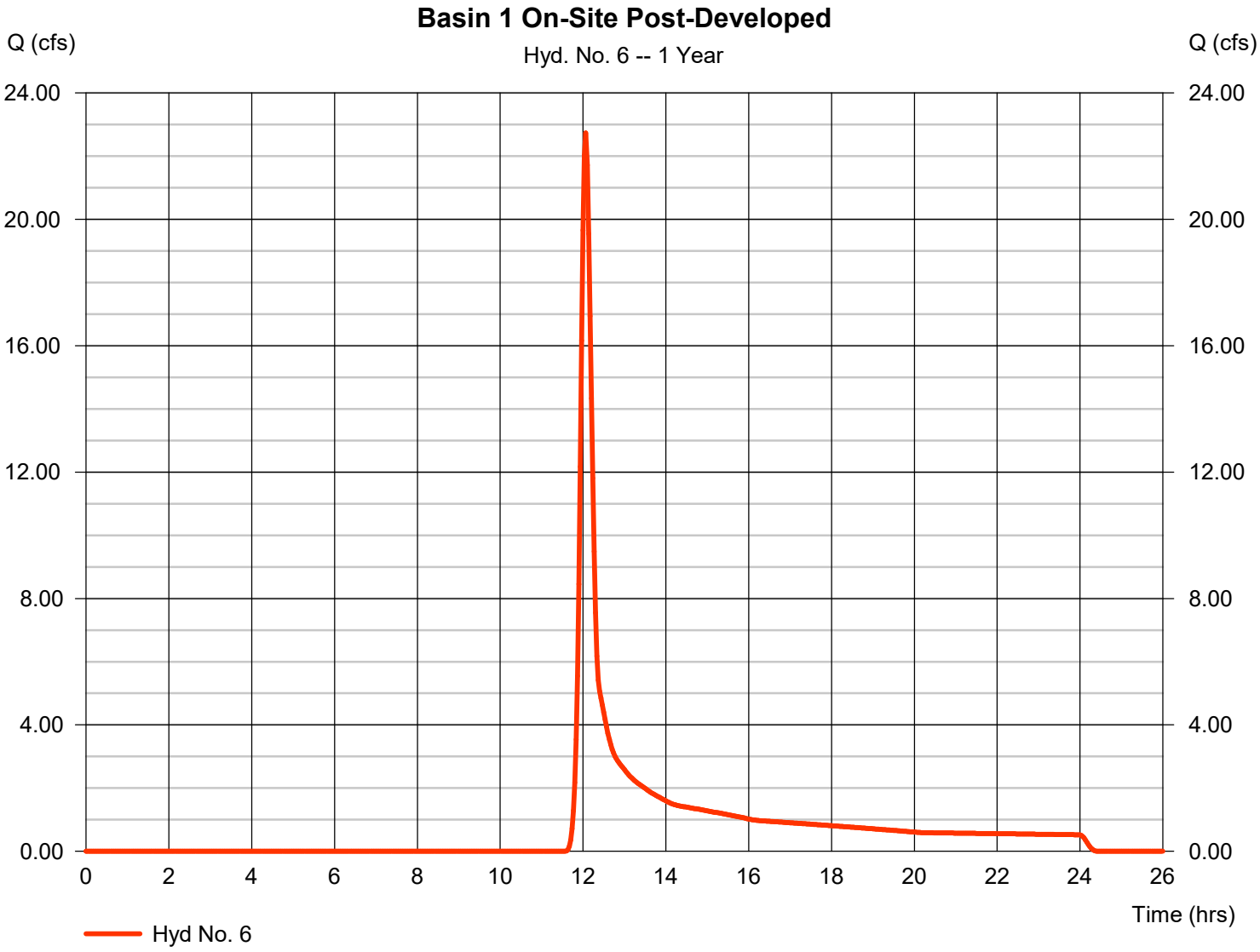
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 6

Basin 1 On-Site Post-Developed

Hydrograph type	=	SCS Runoff	Peak discharge	=	22.73 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	71,618 cuft
Drainage area	=	39.750 ac	Curve number	=	75.7
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	13.50 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



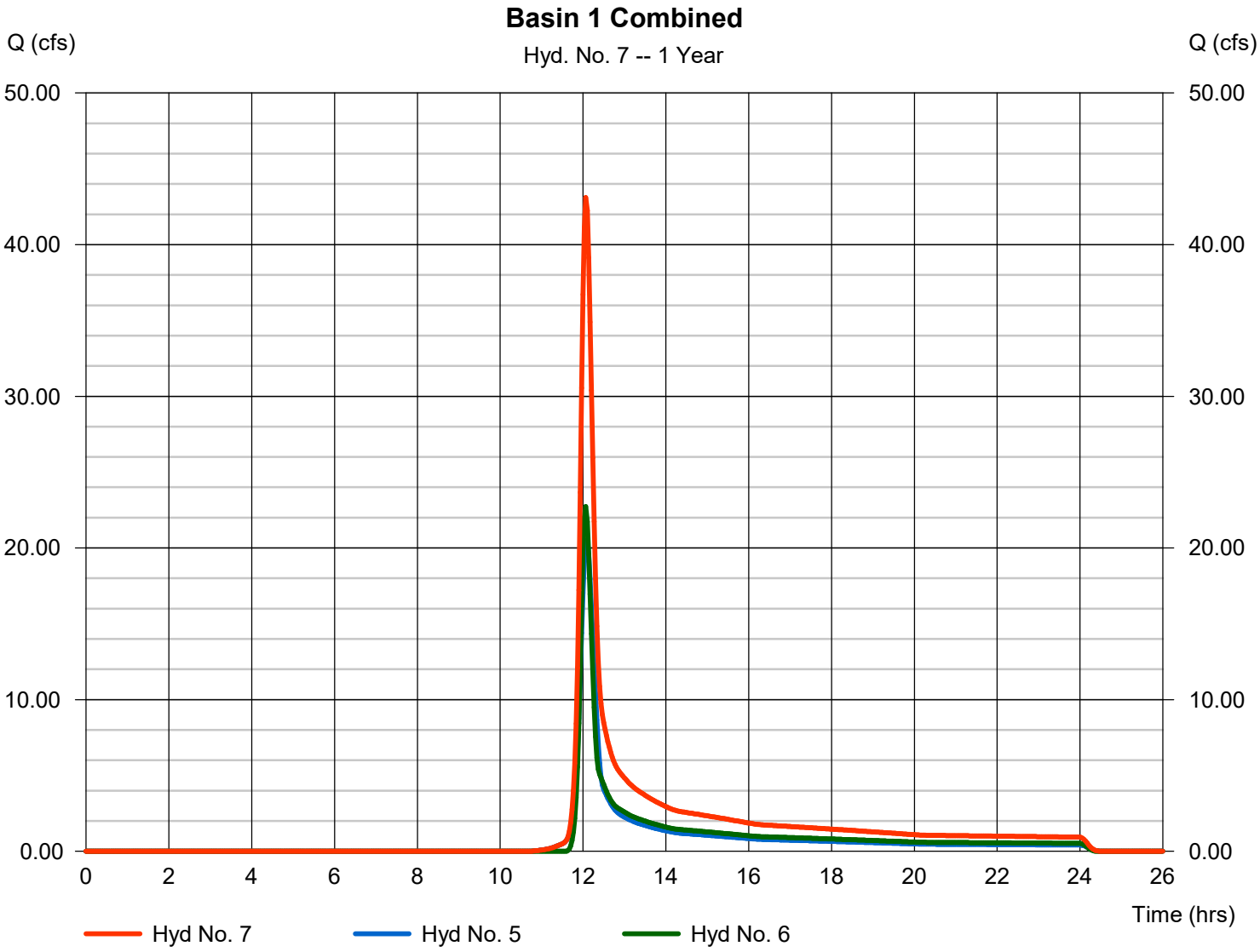
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 7

Basin 1 Combined

Hydrograph type	= Combine	Peak discharge	= 43.10 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 138,559 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 64.200 ac



Hydrograph Report

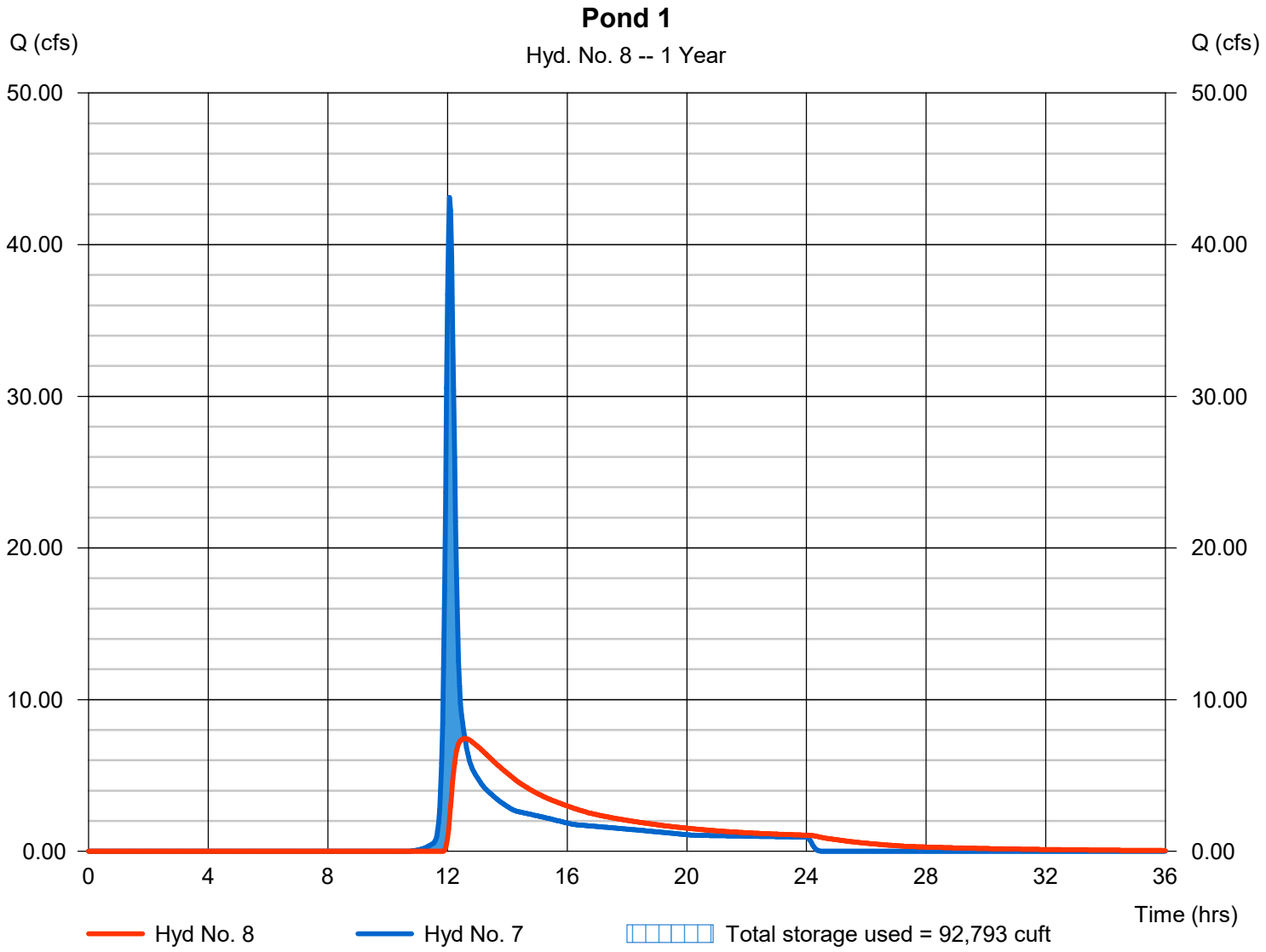
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 8

Pond 1

Hydrograph type	= Reservoir	Peak discharge	= 7.430 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.60 hrs
Time interval	= 2 min	Hyd. volume	= 133,404 cuft
Inflow hyd. No.	= 7 - Basin 1 Combined	Max. Elevation	= 632.72 ft
Reservoir name	= Pond 1	Max. Storage	= 92,793 cuft

Storage Indication method used. Wet pond routing start elevation = 631.80 ft.



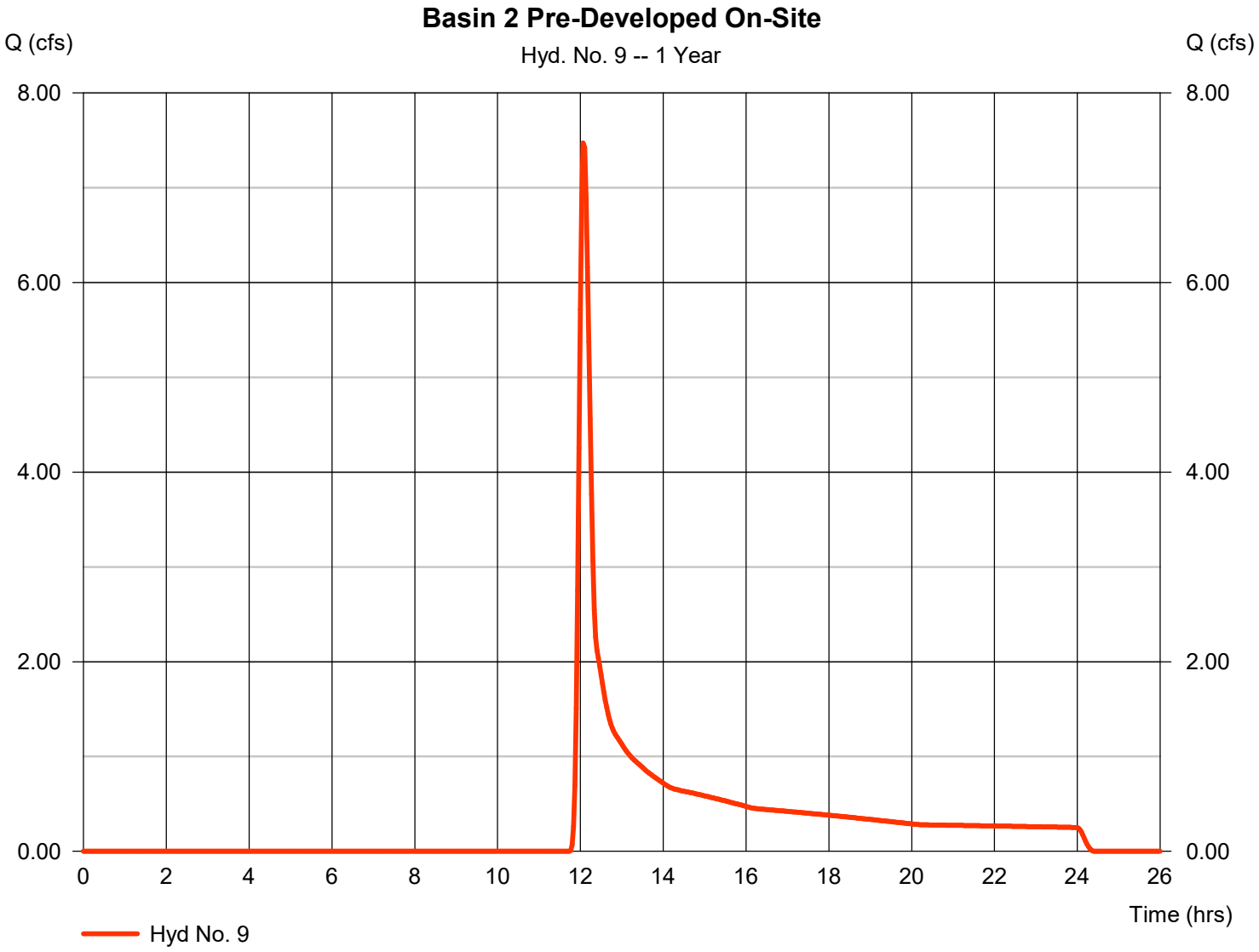
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 9

Basin 2 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 7.472 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 28,816 cuft
Drainage area	= 24.310 ac	Curve number	= 70.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.40 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



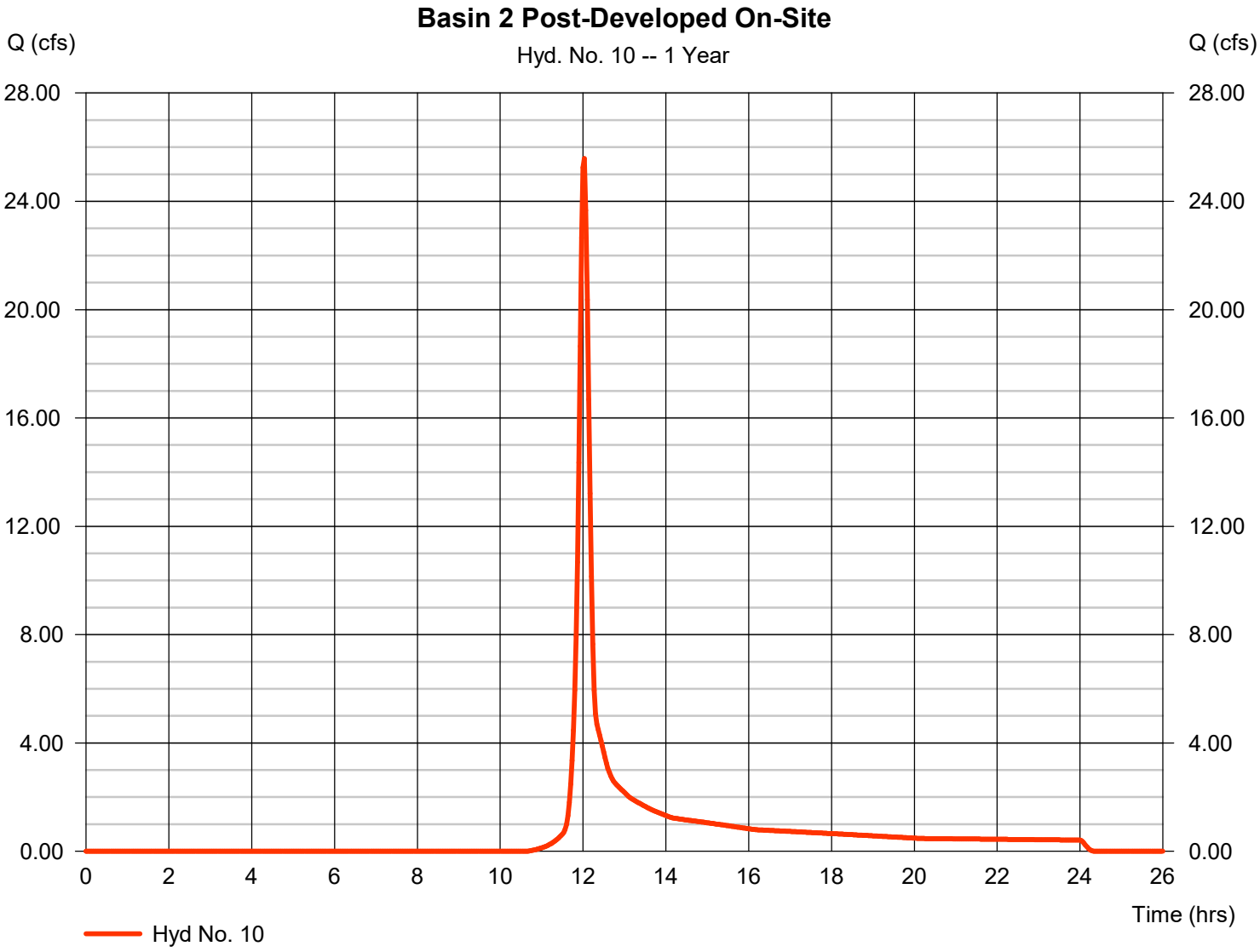
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 10

Basin 2 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 25.58 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 67,888 cuft
Drainage area	= 23.890 ac	Curve number	= 81.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

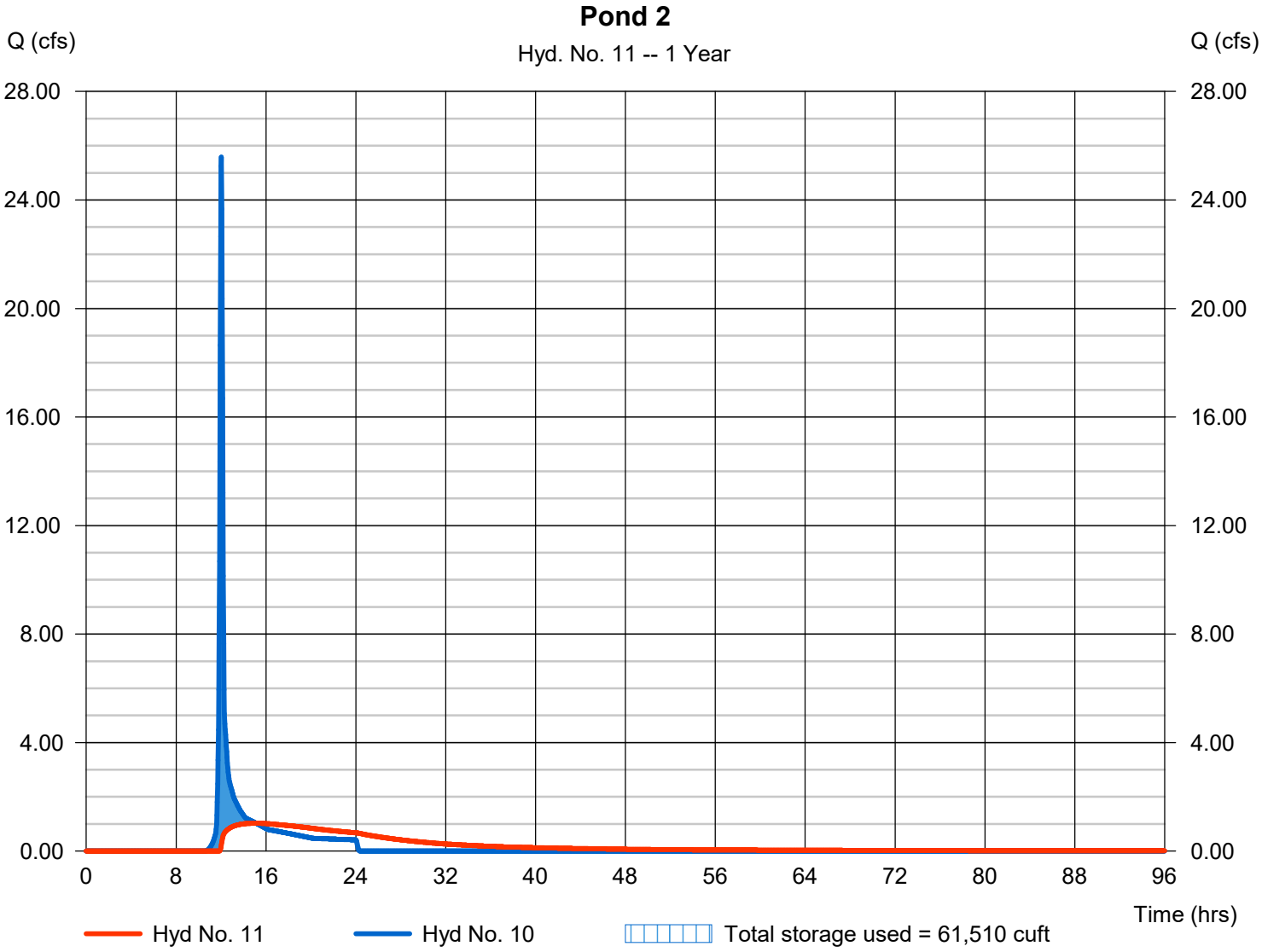
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 11

Pond 2

Hydrograph type	=	Reservoir	Peak discharge	=	1.027 cfs
Storm frequency	=	1 yrs	Time to peak	=	15.13 hrs
Time interval	=	2 min	Hyd. volume	=	62,647 cuft
Inflow hyd. No.	=	10 - Basin 2 Post-Developed On-Site	Max. Elevation	=	634.32 ft
Reservoir name	=	Pond 2	Max. Storage	=	61,510 cuft

Storage Indication method used. Wet pond routing start elevation = 633.50 ft.



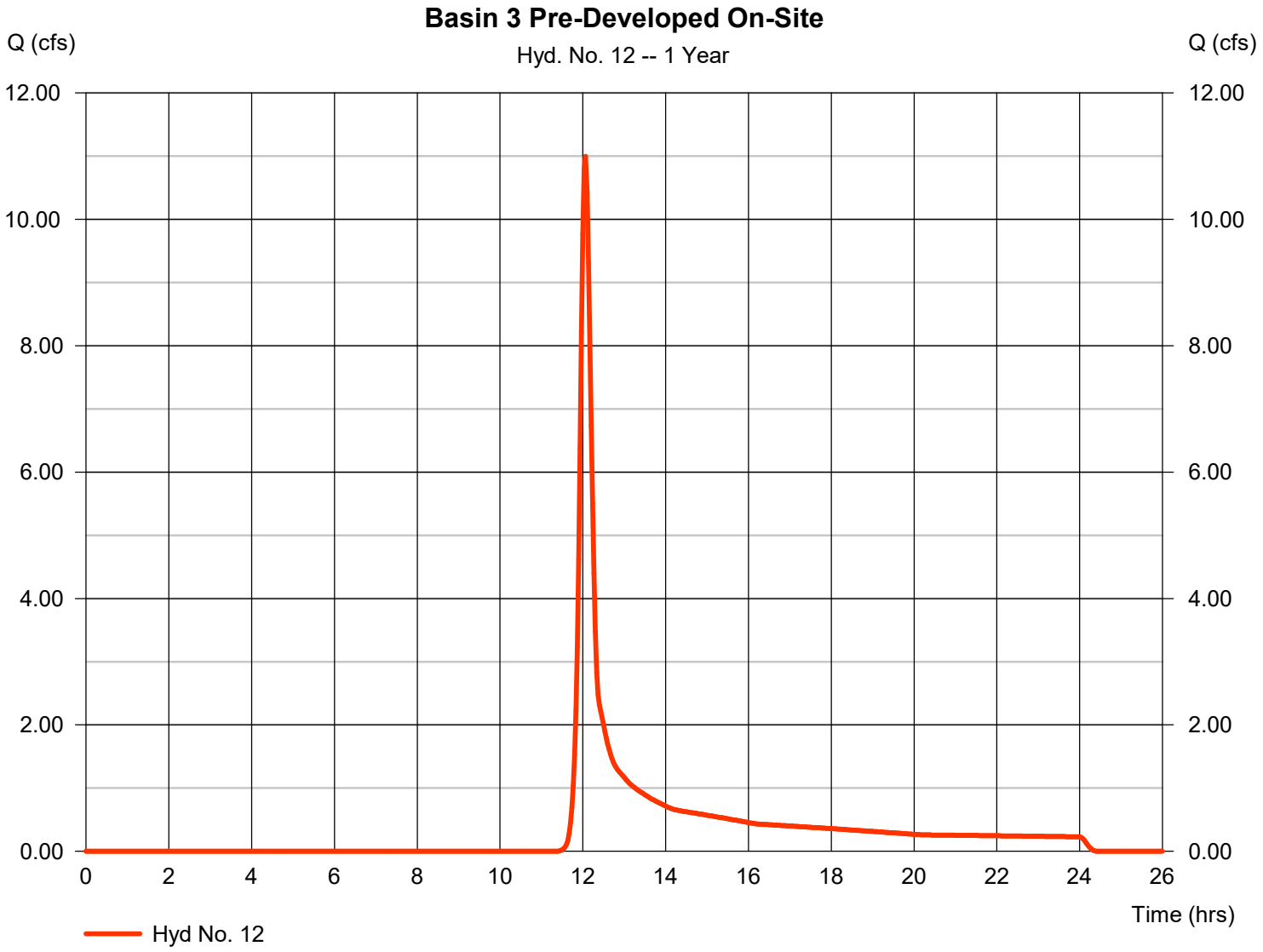
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 12

Basin 3 Pre-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	11.00 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	33,397 cuft
Drainage area	=	16.160 ac	Curve number	=	77.6
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.30 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



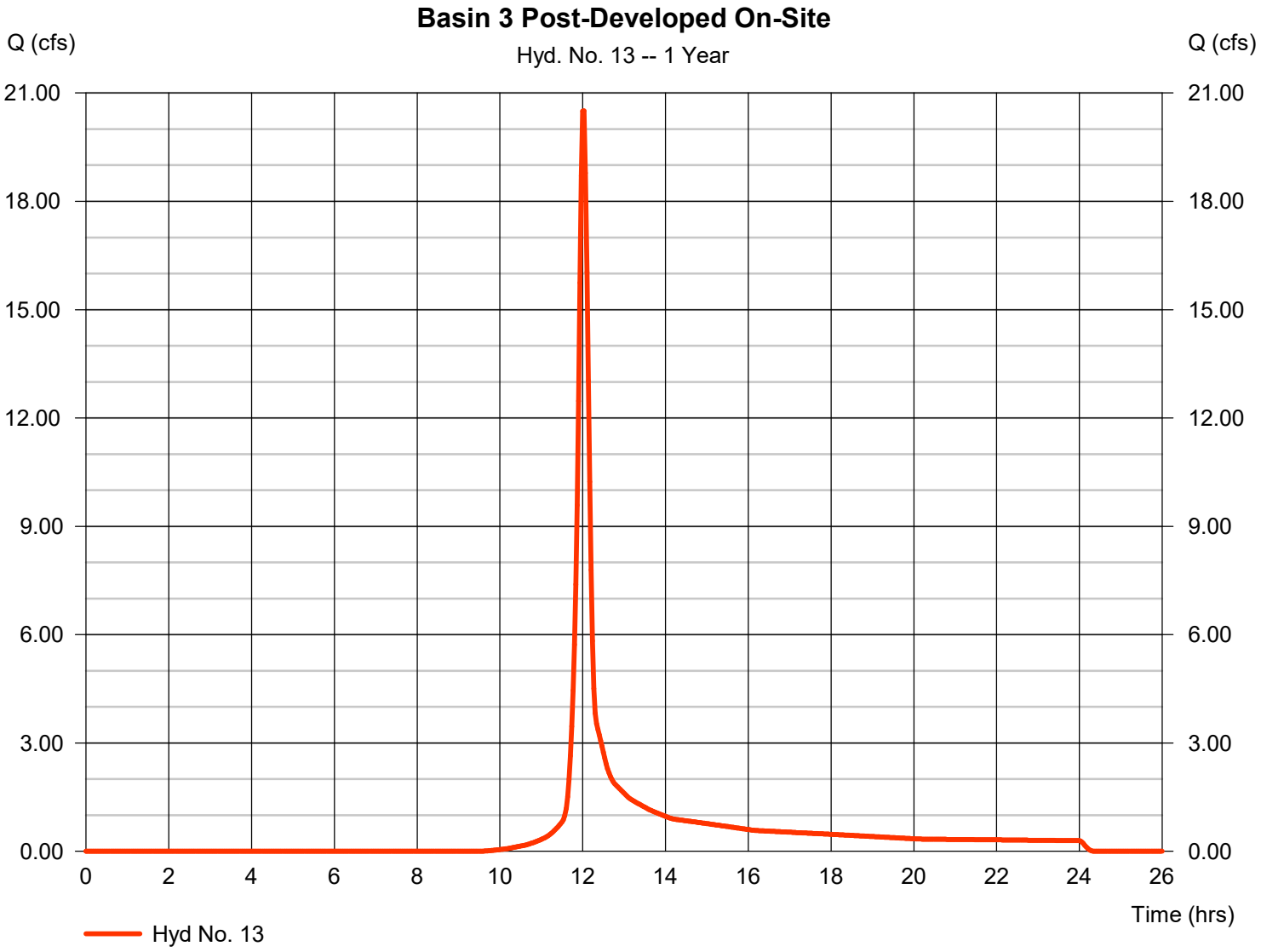
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 13

Basin 3 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 20.50 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 53,641 cuft
Drainage area	= 15.170 ac	Curve number	= 85
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

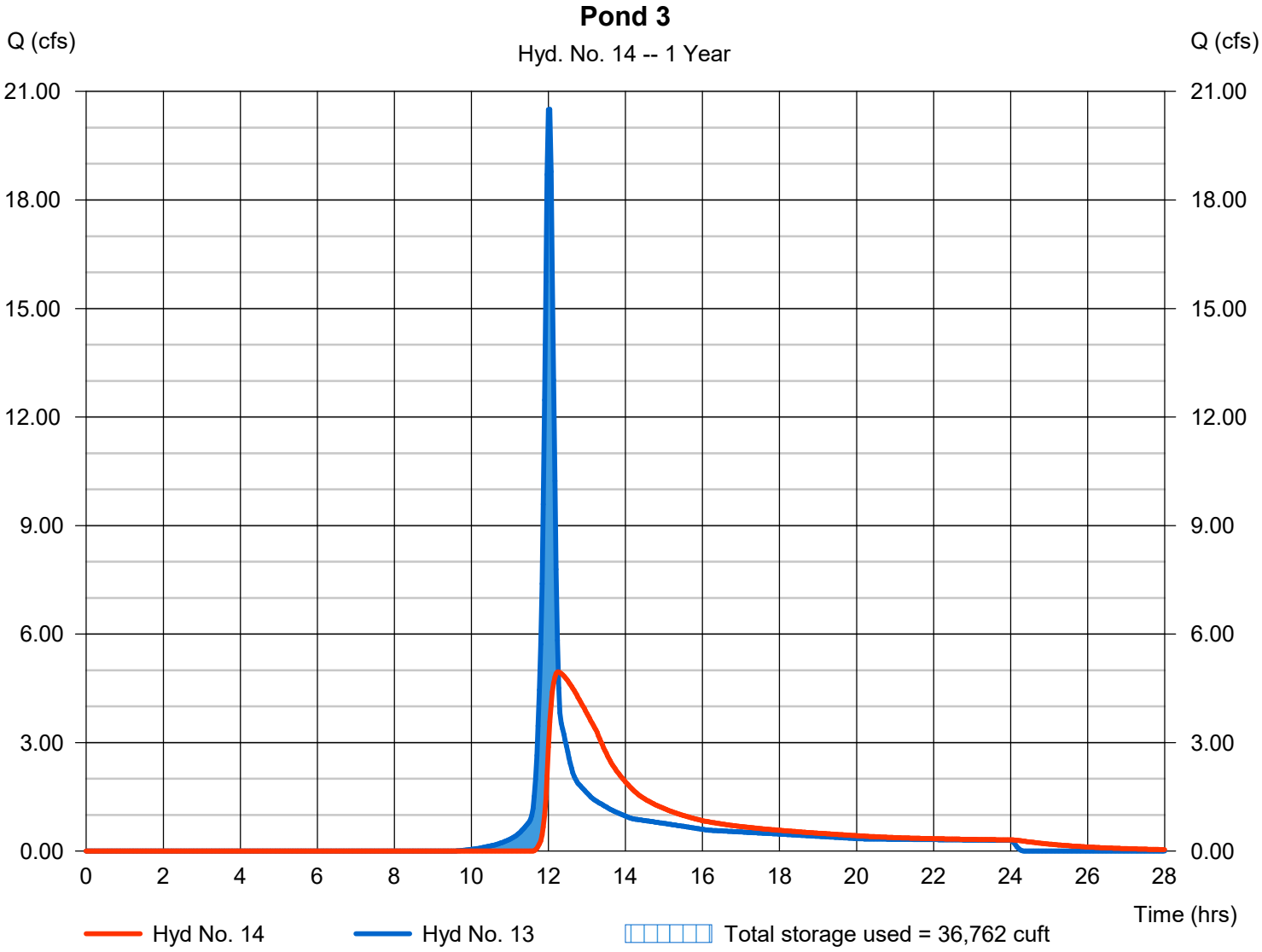
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 14

Pond 3

Hydrograph type	=	Reservoir	Peak discharge	=	4.954 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.27 hrs
Time interval	=	2 min	Hyd. volume	=	51,619 cuft
Inflow hyd. No.	=	13 - Basin 3 Post-Developed On-Site	Max. Elevation	=	655.71 ft
Reservoir name	=	Pond 3	Max. Storage	=	36,762 cuft

Storage Indication method used. Wet pond routing start elevation = 654.80 ft.



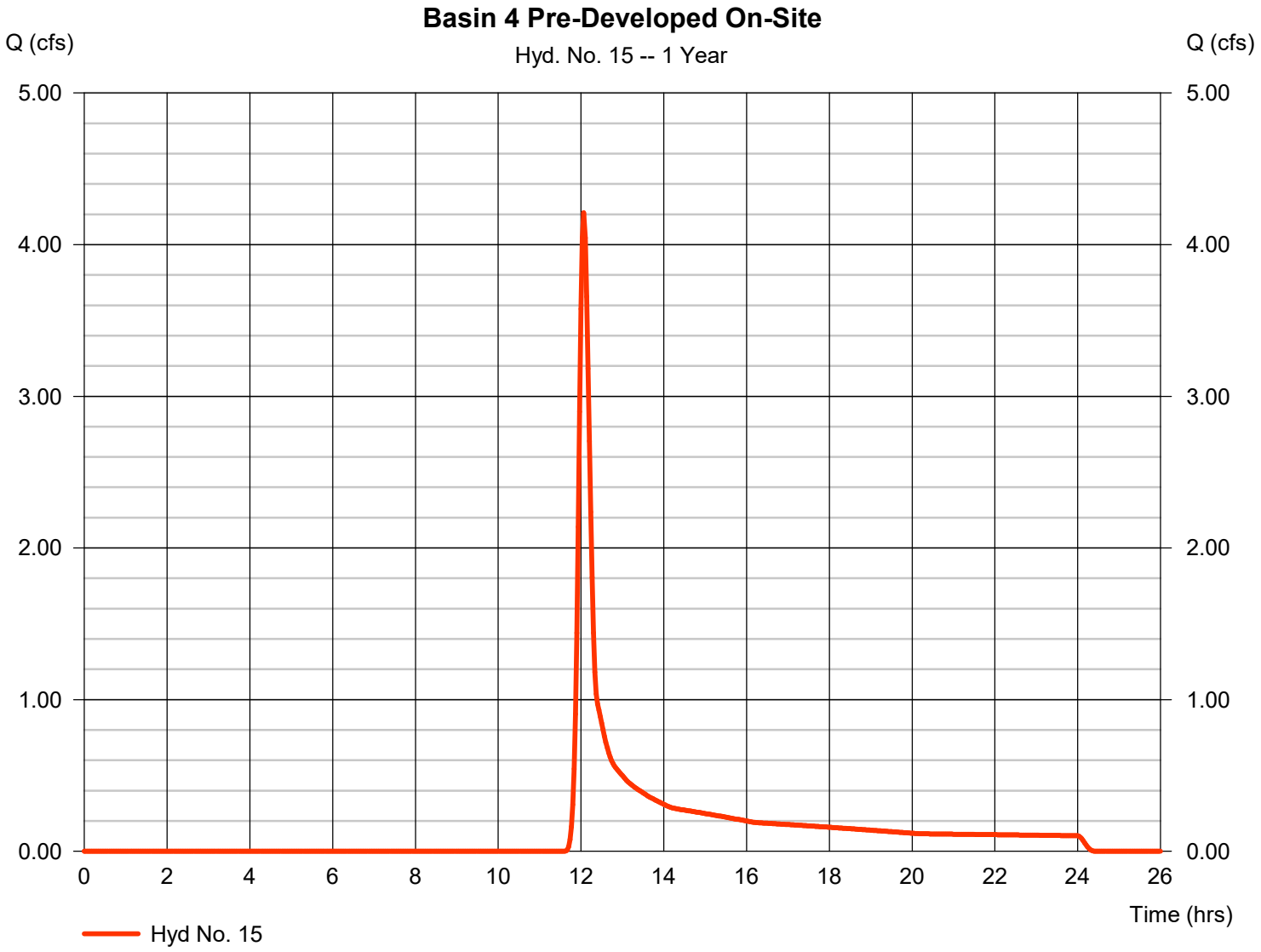
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 15

Basin 4 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 4.211 cfs
Storm frequency	= 1 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 13,604 cuft
Drainage area	= 8.140 ac	Curve number	= 74.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.20 min
Total precip.	= 2.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



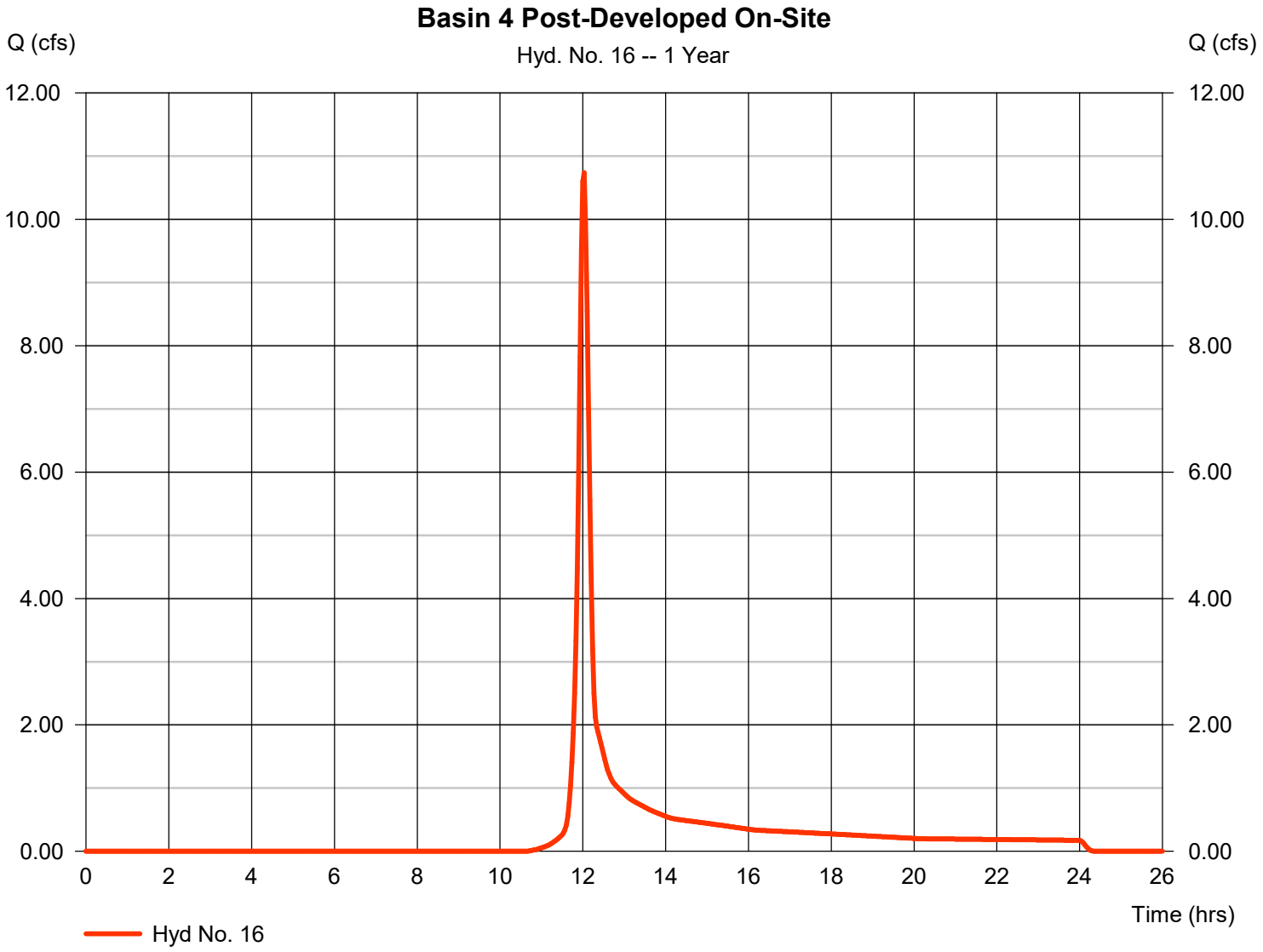
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 16

Basin 4 Post-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.74 cfs
Storm frequency	=	1 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	28,502 cuft
Drainage area	=	10.030 ac	Curve number	=	81.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

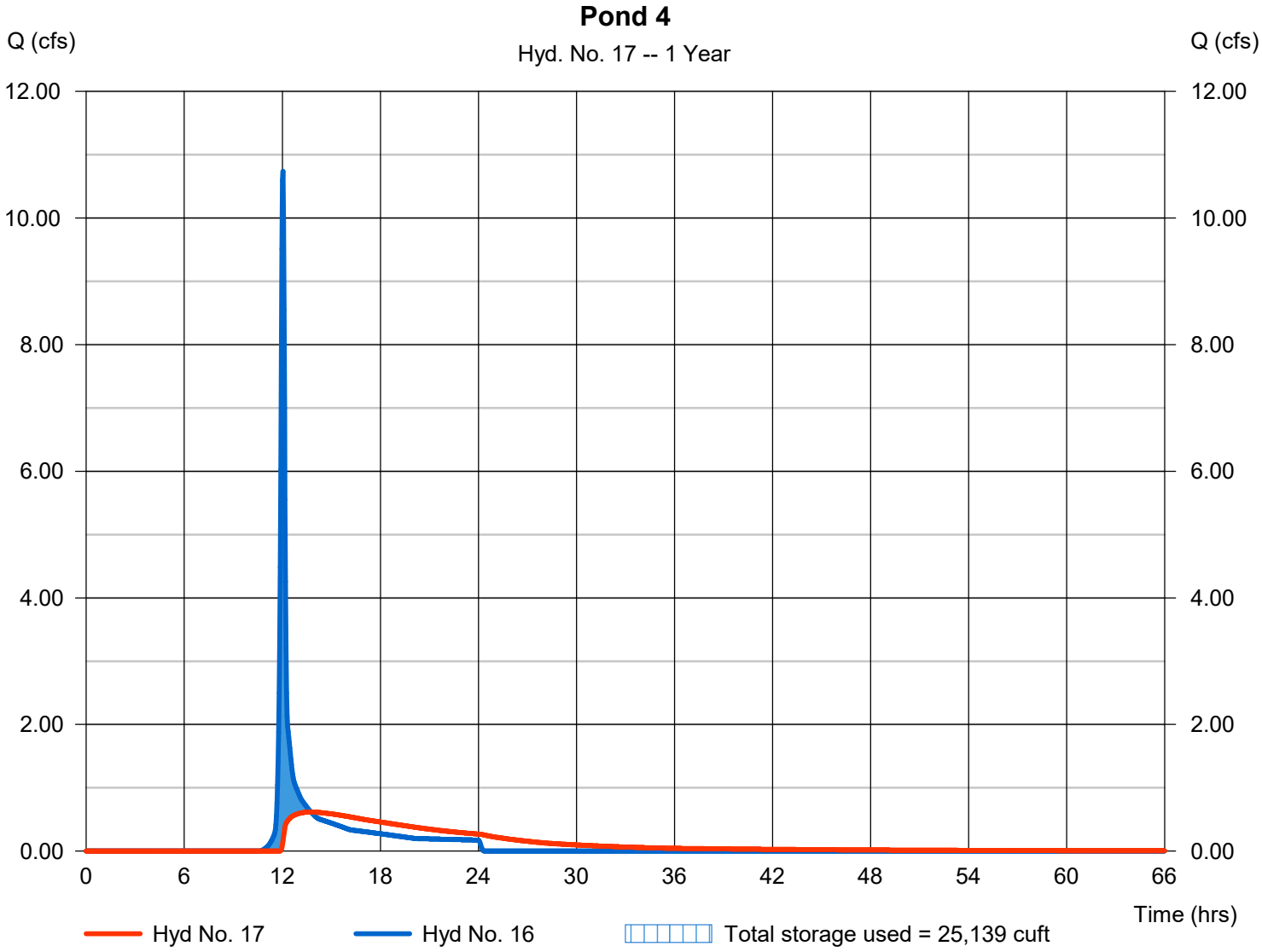
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 17

Pond 4

Hydrograph type	=	Reservoir	Peak discharge	=	0.617 cfs
Storm frequency	=	1 yrs	Time to peak	=	13.77 hrs
Time interval	=	2 min	Hyd. volume	=	26,364 cuft
Inflow hyd. No.	=	16 - Basin 4 Post-Developed On-Site	Max. Elevation	=	704.18 ft
Reservoir name	=	Pond 4	Max. Storage	=	25,139 cuft

Storage Indication method used. Wet pond routing start elevation = 703.50 ft.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	9.172	2	730	53,366	------	------	------	Basin 1 Pre-Developed On-Site
2	SCS Runoff	29.50	2	728	110,284	------	------	------	Basin 1 Off-Site Pre-Developed
3	Manual	1.550	2	740	19,835	------	------	------	Basin 1 Pre-Developed Allowable
4	Combine	30.83	2	730	130,119	2, 3	------	------	Basin 1 Pre-Developed Combined All
5	SCS Runoff	35.34	2	724	112,035	------	------	------	Basin 1 Off-Site Post-Developed
6	SCS Runoff	44.75	2	724	131,178	------	------	------	Basin 1 On-Site Post-Developed
7	Combine	80.09	2	724	243,213	5, 6	------	------	Basin 1 Combined
8	Reservoir	18.38	2	744	238,058	7	633.40	134,411	Pond 1
9	SCS Runoff	18.69	2	724	58,619	------	------	------	Basin 2 Pre-Developed On-Site
10	SCS Runoff	43.43	2	720	113,458	------	------	------	Basin 2 Post-Developed On-Site
11	Reservoir	2.230	2	828	108,114	10	634.81	85,991	Pond 2
12	SCS Runoff	20.47	2	724	59,232	------	------	------	Basin 3 Pre-Developed On-Site
13	SCS Runoff	32.95	2	720	85,444	------	------	------	Basin 3 Post-Developed On-Site
14	Reservoir	7.035	2	736	83,422	13	656.28	51,007	Pond 3
15	SCS Runoff	8.579	2	724	25,371	------	------	------	Basin 4 Pre-Developed On-Site
16	SCS Runoff	18.23	2	720	47,634	------	------	------	Basin 4 Post-Developed On-Site
17	Reservoir	1.368	2	784	45,496	16	704.58	34,761	Pond 4

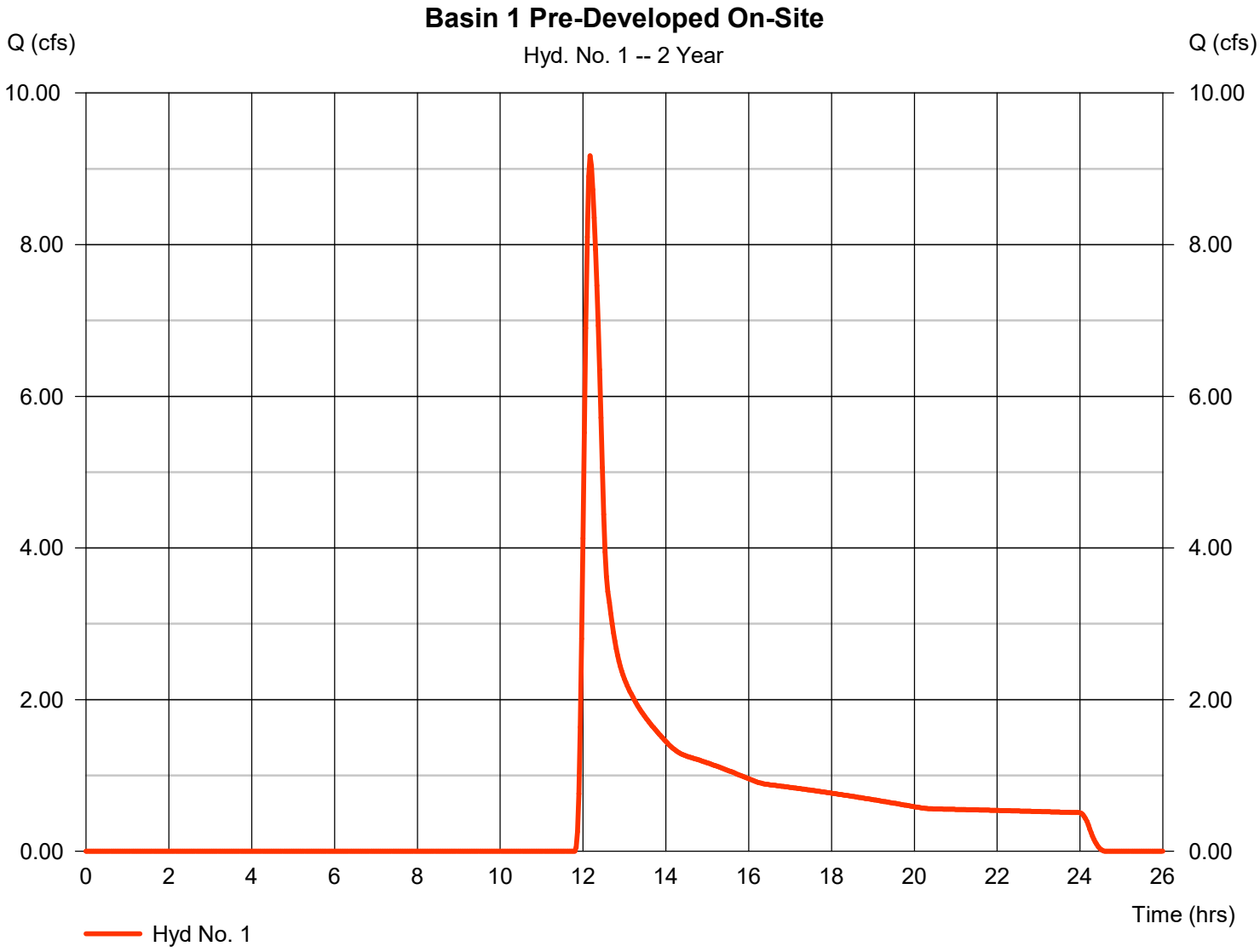
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 1

Basin 1 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 9.172 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 53,366 cuft
Drainage area	= 40.220 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.40 min
Total precip.	= 2.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



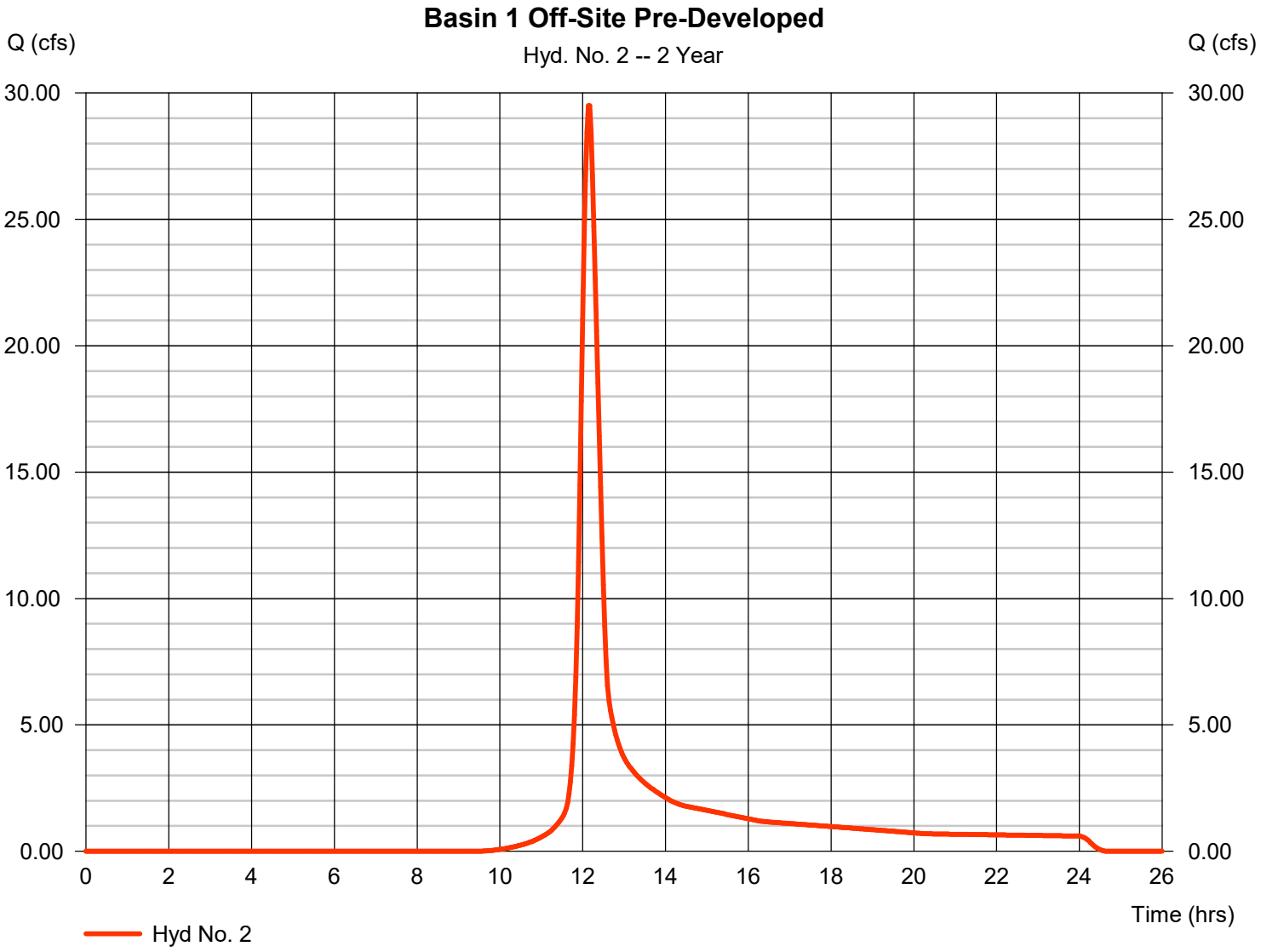
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 2

Basin 1 Off-Site Pre-Developed

Hydrograph type	=	SCS Runoff	Peak discharge	=	29.50 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.13 hrs
Time interval	=	2 min	Hyd. volume	=	110,284 cuft
Drainage area	=	24.450 ac	Curve number	=	81.4
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	23.50 min
Total precip.	=	2.90 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



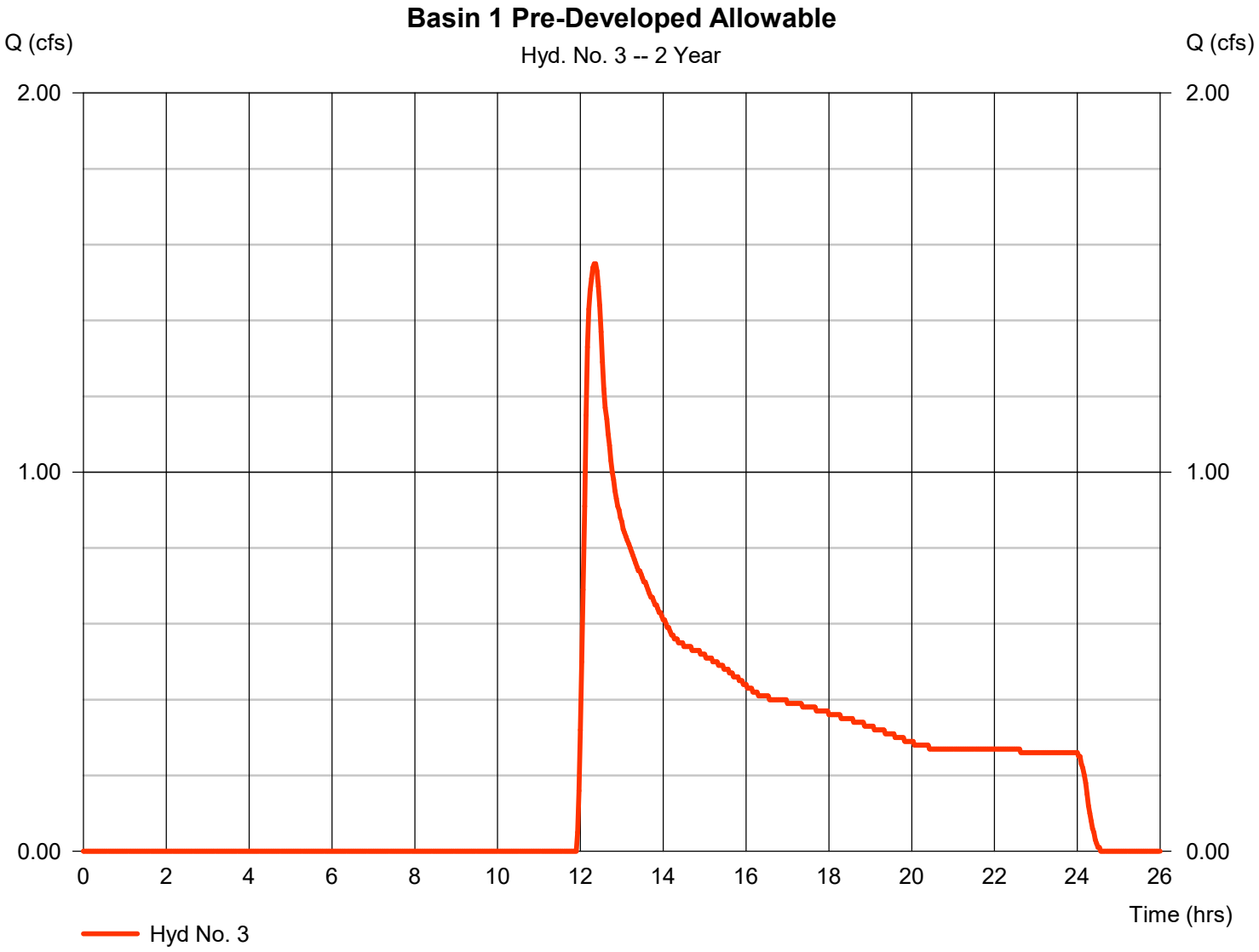
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 3

Basin 1 Pre-Developed Allowable

Hydrograph type	= Manual	Peak discharge	= 1.550 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 19,835 cuft

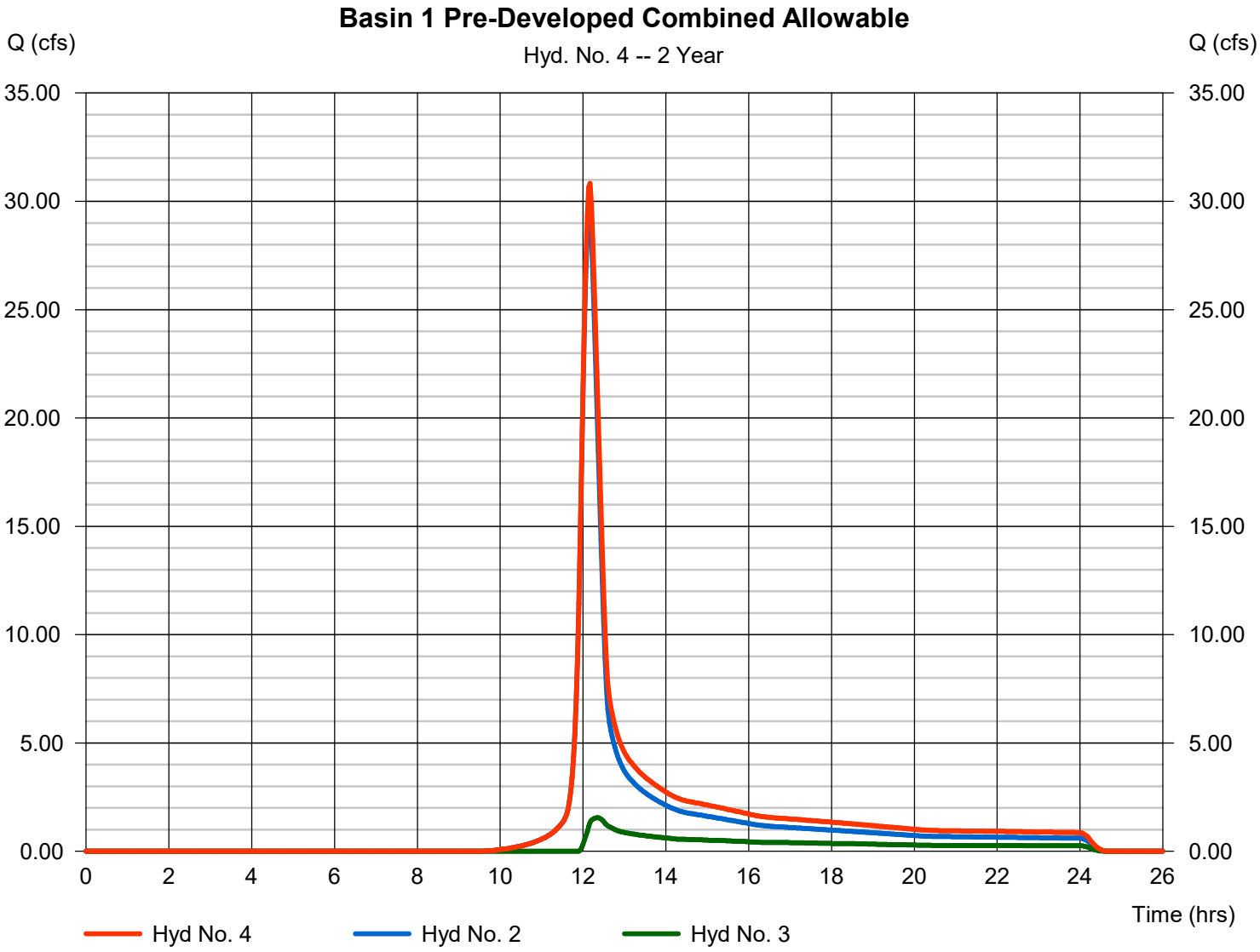


Hydrograph Report

Hyd. No. 4

Basin 1 Pre-Developed Combined Allowable

Hydrograph type	= Combine	Peak discharge	= 30.83 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 130,119 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 24.450 ac



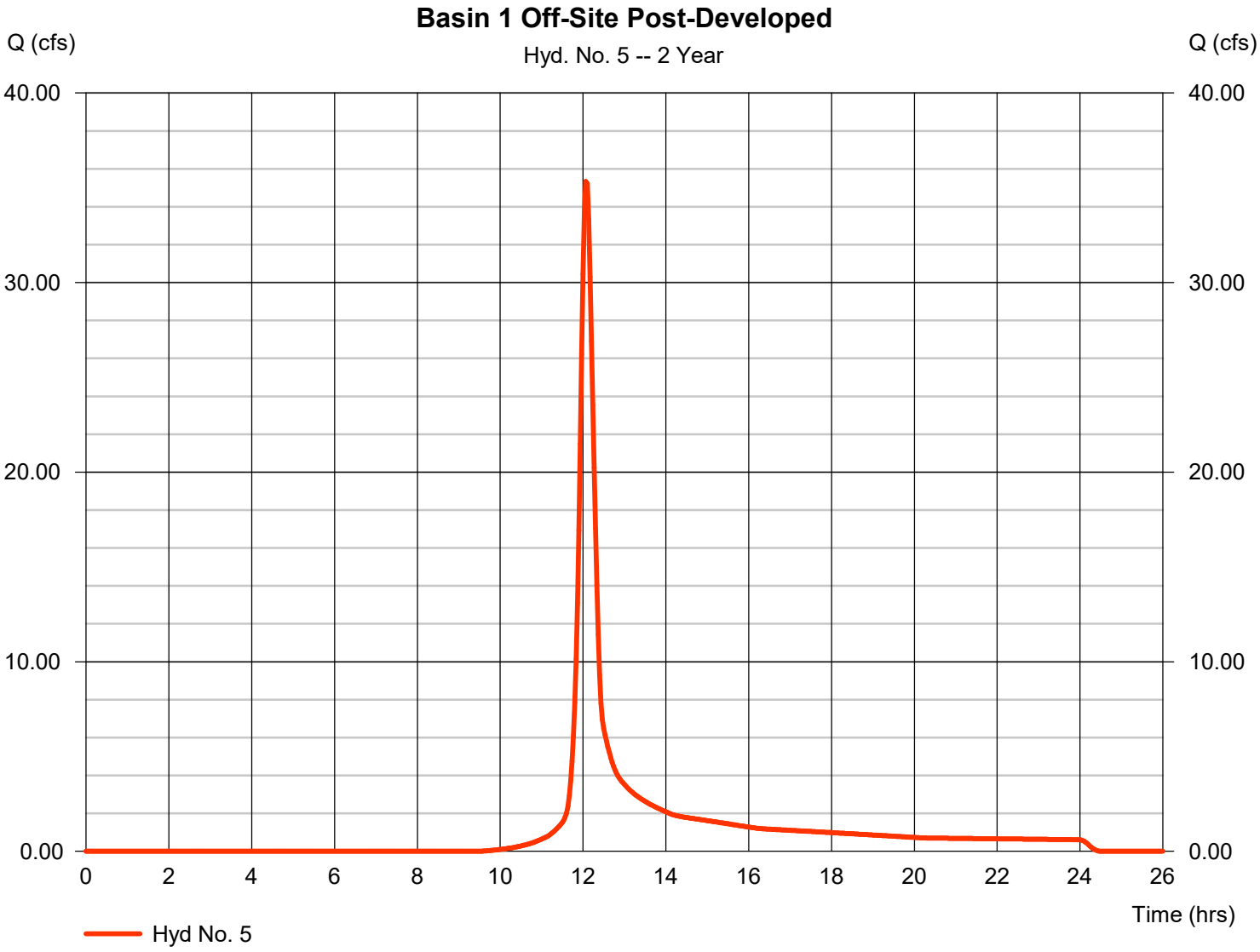
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 5

Basin 1 Off-Site Post-Developed

Hydrograph type	=	SCS Runoff	Peak discharge	=	35.34 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	112,035 cuft
Drainage area	=	24.450 ac	Curve number	=	81.4
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	20.00 min
Total precip.	=	2.90 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

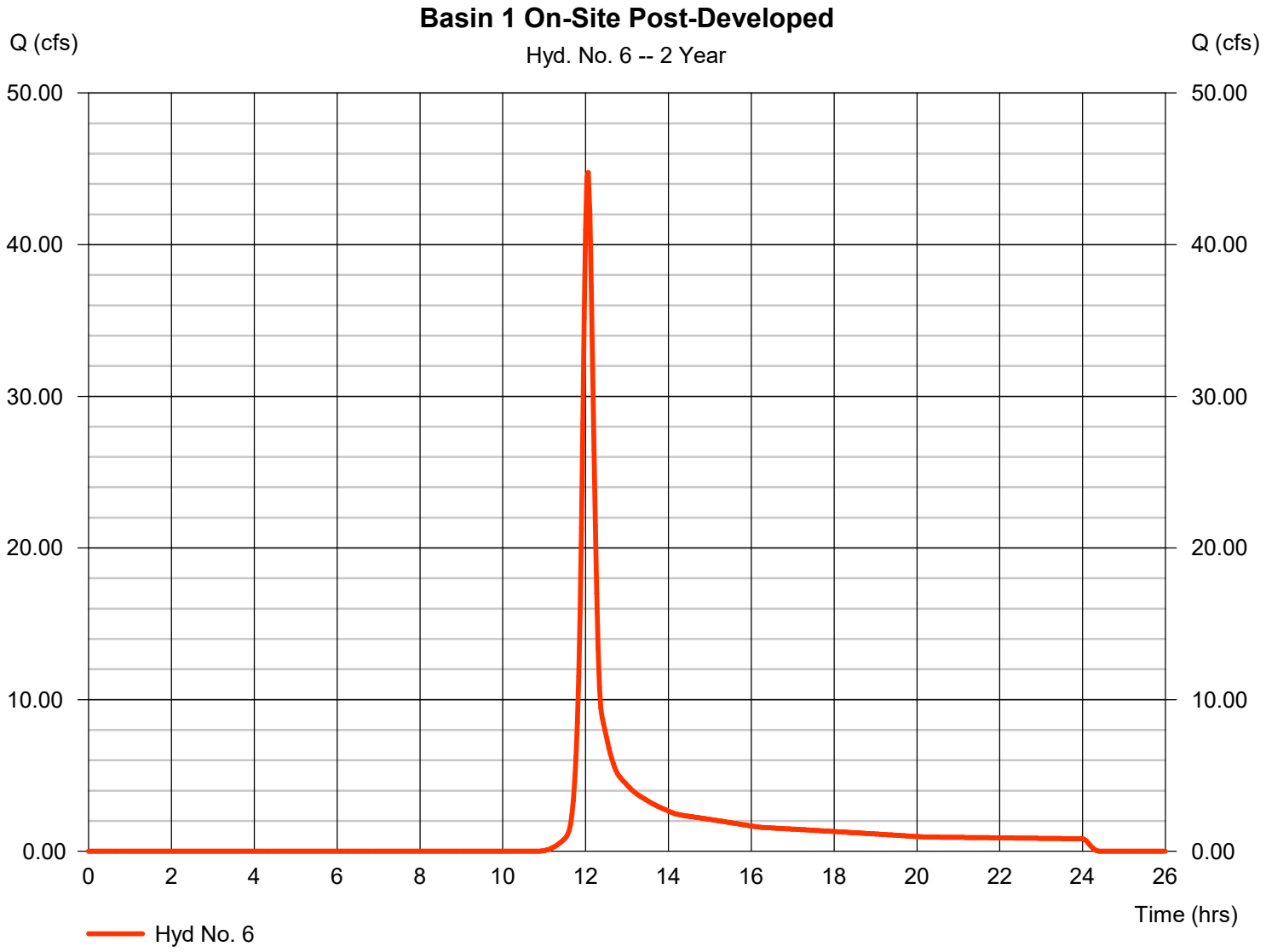


Hydrograph Report

Hyd. No. 6

Basin 1 On-Site Post-Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 44.75 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 131,178 cuft
Drainage area	= 39.750 ac	Curve number	= 75.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 2.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

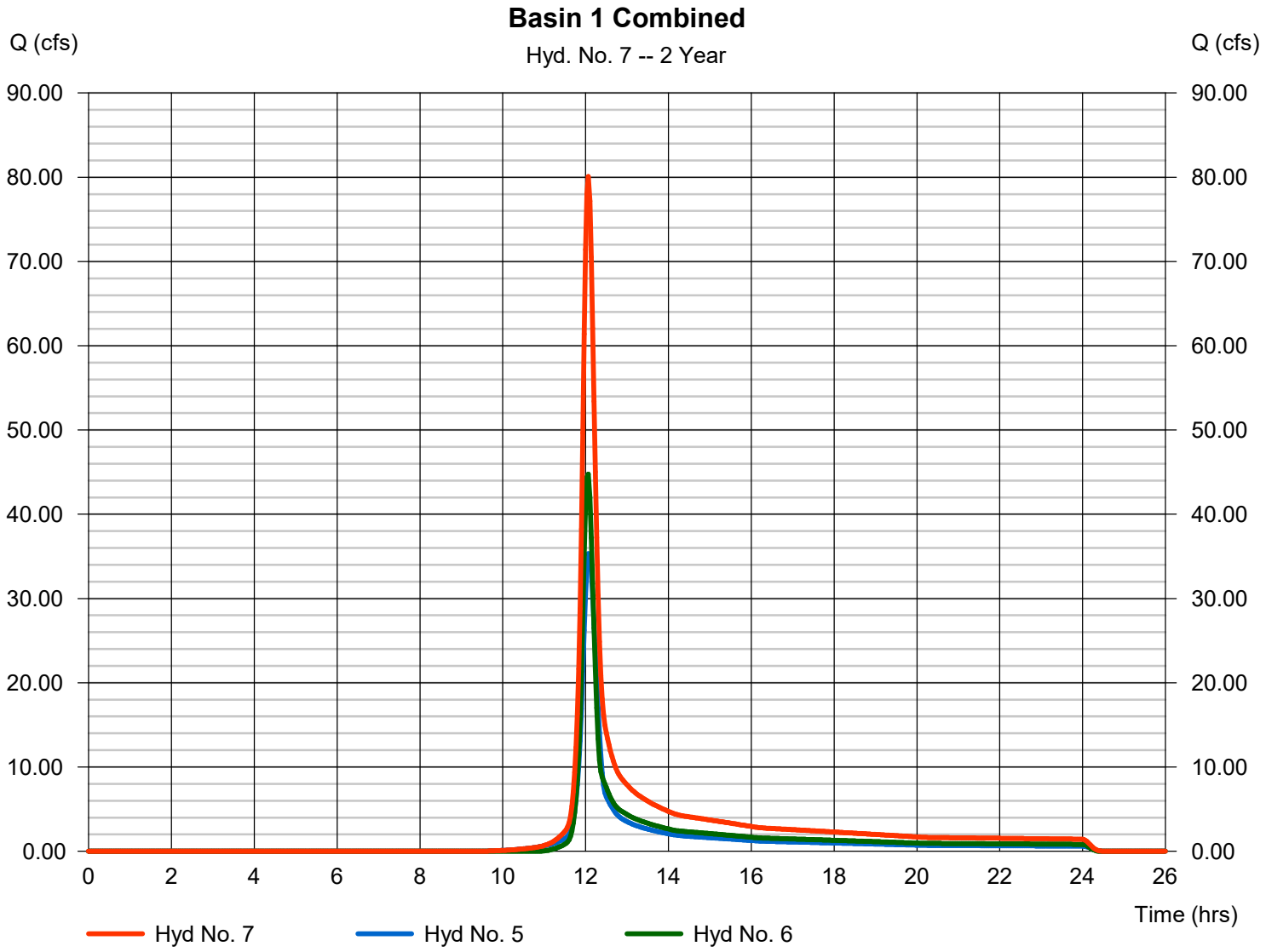


Hydrograph Report

Hyd. No. 7

Basin 1 Combined

Hydrograph type	= Combine	Peak discharge	= 80.09 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 243,213 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 64.200 ac



Hydrograph Report

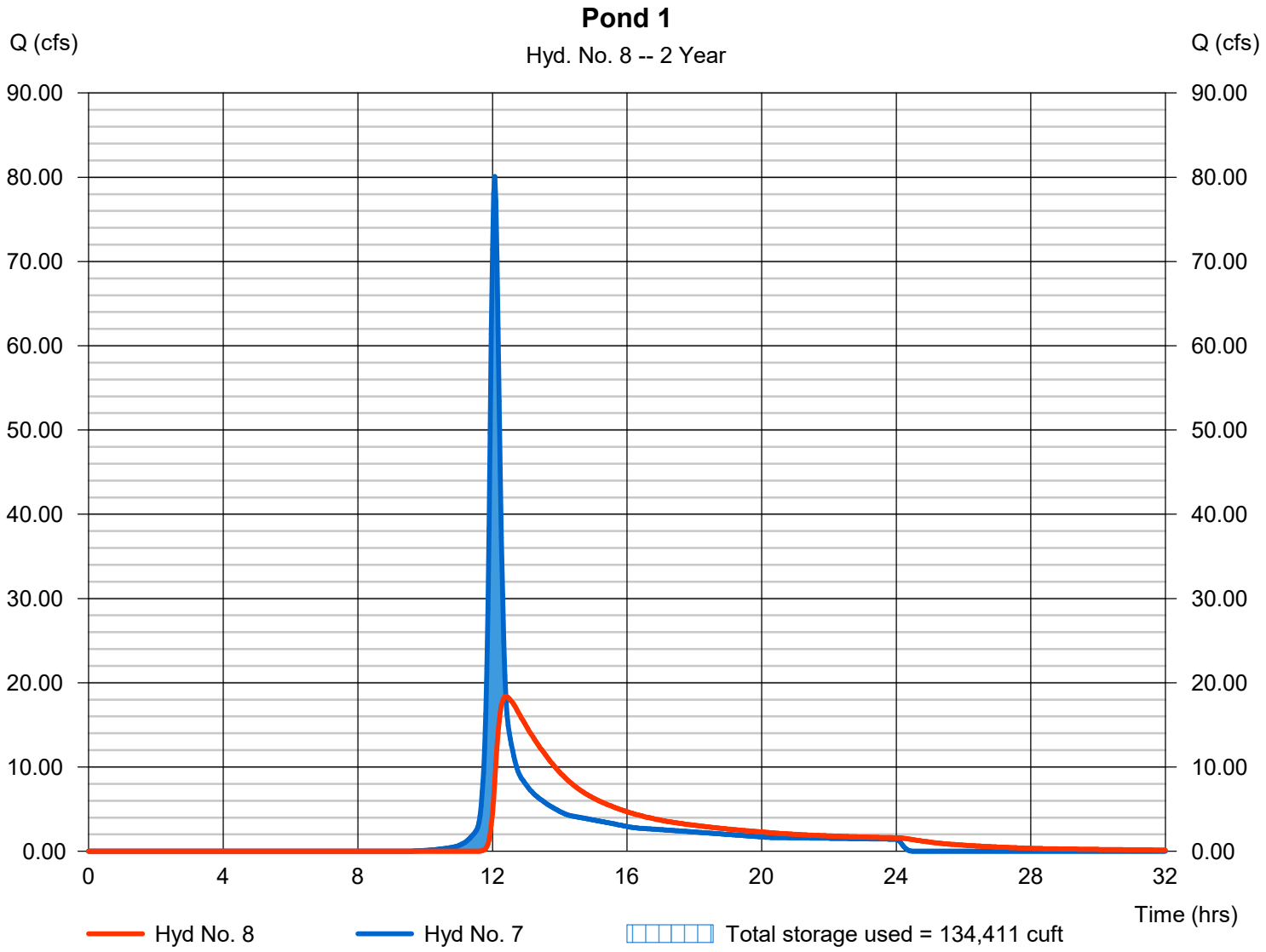
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 8

Pond 1

Hydrograph type	=	Reservoir	Peak discharge	=	18.38 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.40 hrs
Time interval	=	2 min	Hyd. volume	=	238,058 cuft
Inflow hyd. No.	=	7 - Basin 1 Combined	Max. Elevation	=	633.40 ft
Reservoir name	=	Pond 1	Max. Storage	=	134,411 cuft

Storage Indication method used. Wet pond routing start elevation = 631.80 ft.



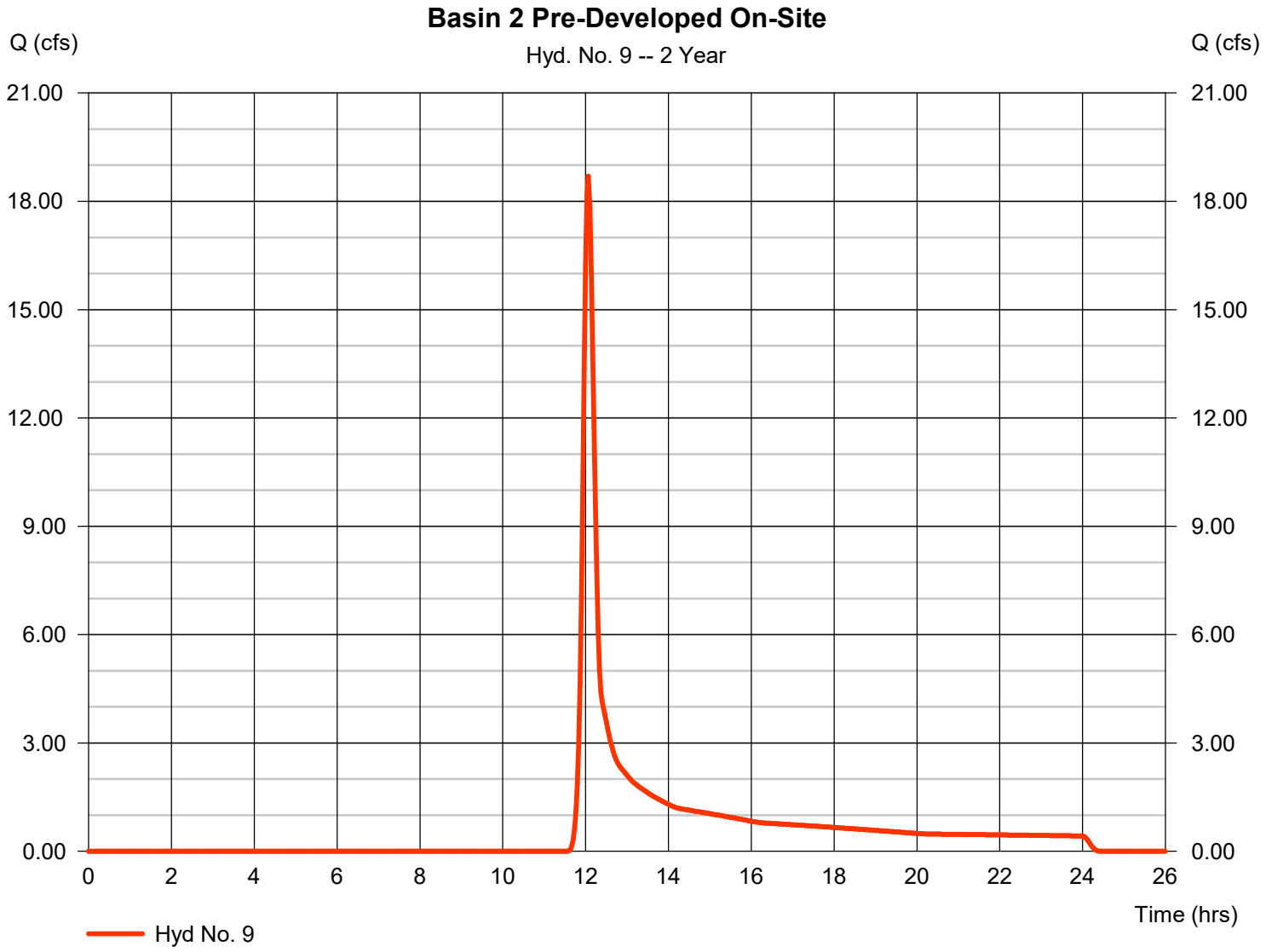
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 9

Basin 2 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 18.69 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 58,619 cuft
Drainage area	= 24.310 ac	Curve number	= 70.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.40 min
Total precip.	= 2.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



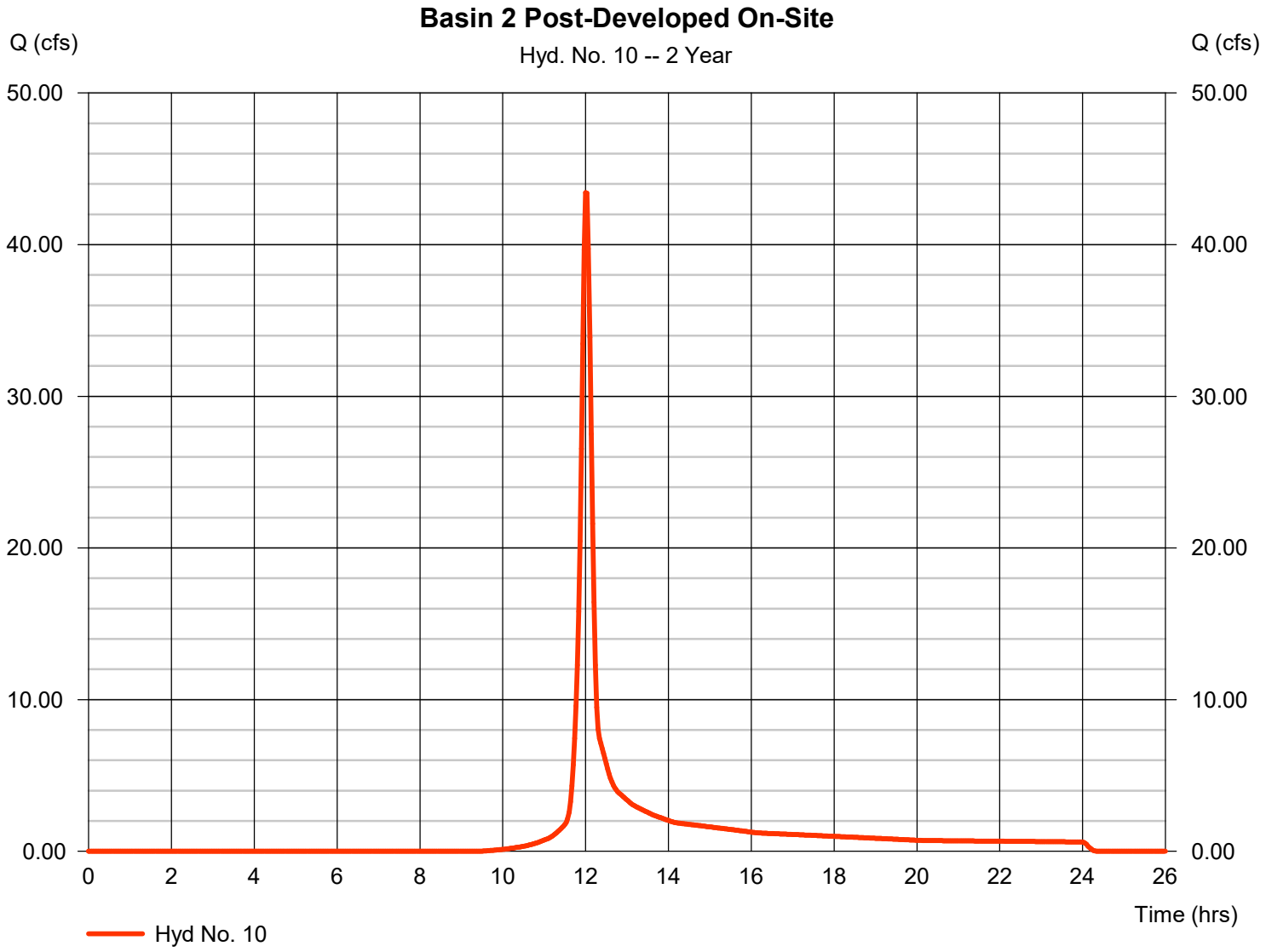
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 10

Basin 2 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 43.43 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 113,458 cuft
Drainage area	= 23.890 ac	Curve number	= 81.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

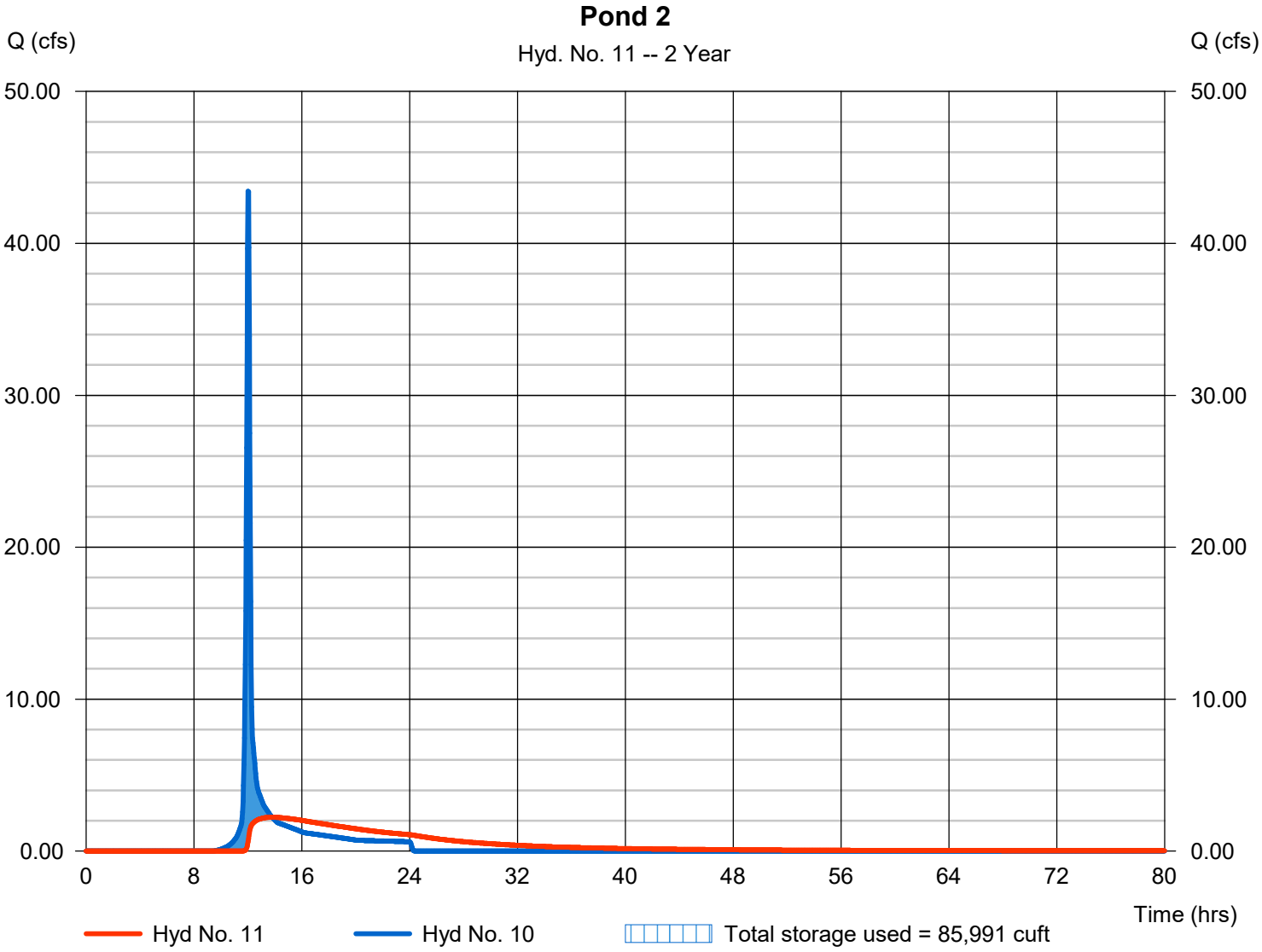
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 11

Pond 2

Hydrograph type	=	Reservoir	Peak discharge	=	2.230 cfs
Storm frequency	=	2 yrs	Time to peak	=	13.80 hrs
Time interval	=	2 min	Hyd. volume	=	108,114 cuft
Inflow hyd. No.	=	10 - Basin 2 Post-Developed On-Site	Max. Elevation	=	634.81 ft
Reservoir name	=	Pond 2	Max. Storage	=	85,991 cuft

Storage Indication method used. Wet pond routing start elevation = 633.50 ft.



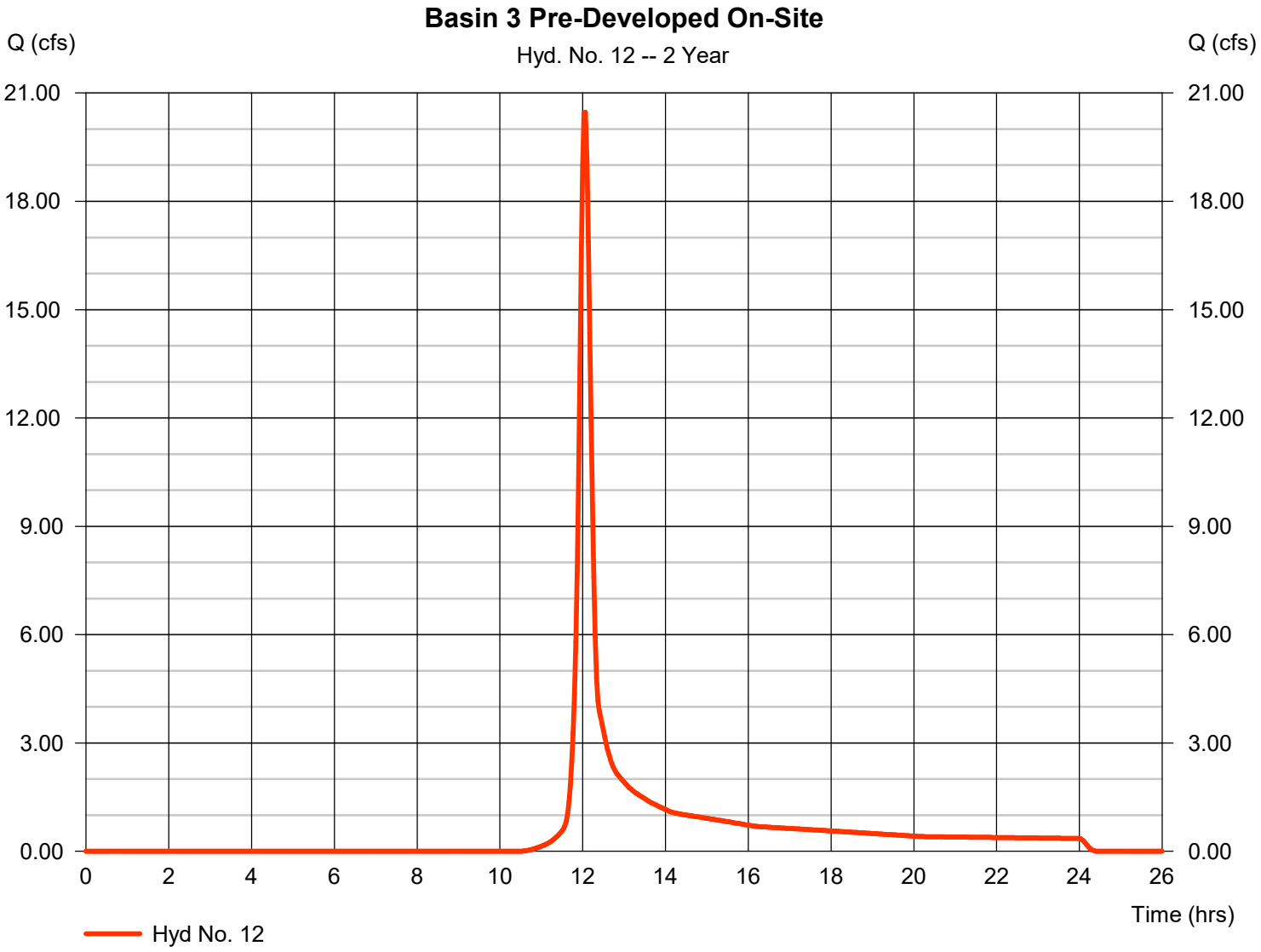
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 12

Basin 3 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 20.47 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 59,232 cuft
Drainage area	= 16.160 ac	Curve number	= 77.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.30 min
Total precip.	= 2.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



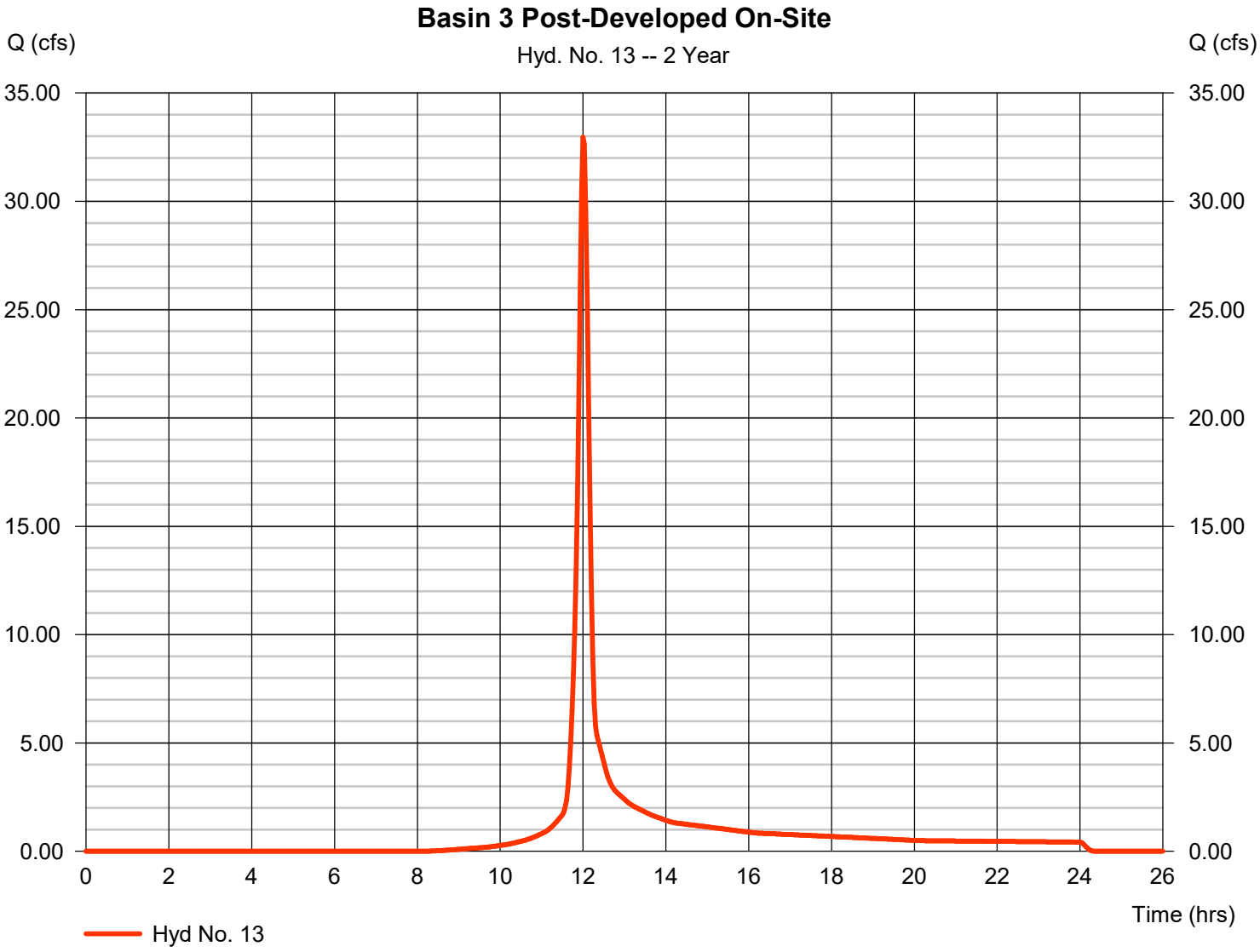
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 13

Basin 3 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 32.95 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 85,444 cuft
Drainage area	= 15.170 ac	Curve number	= 85
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 2.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

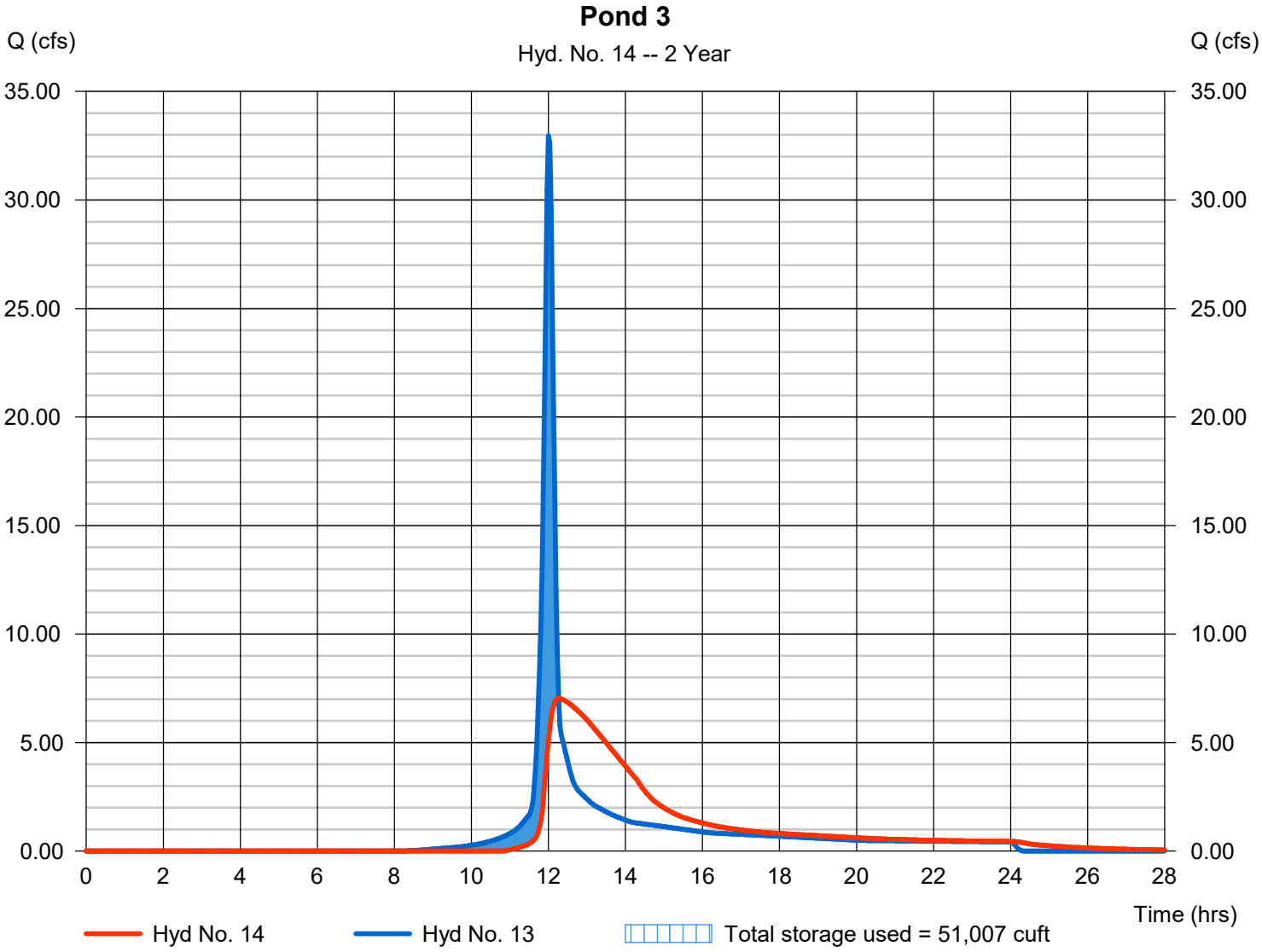
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 14

Pond 3

Hydrograph type	=	Reservoir	Peak discharge	=	7.035 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.27 hrs
Time interval	=	2 min	Hyd. volume	=	83,422 cuft
Inflow hyd. No.	=	13 - Basin 3 Post-Developed On-Site	Max. Elevation	=	656.28 ft
Reservoir name	=	Pond 3	Max. Storage	=	51,007 cuft

Storage Indication method used. Wet pond routing start elevation = 654.80 ft.



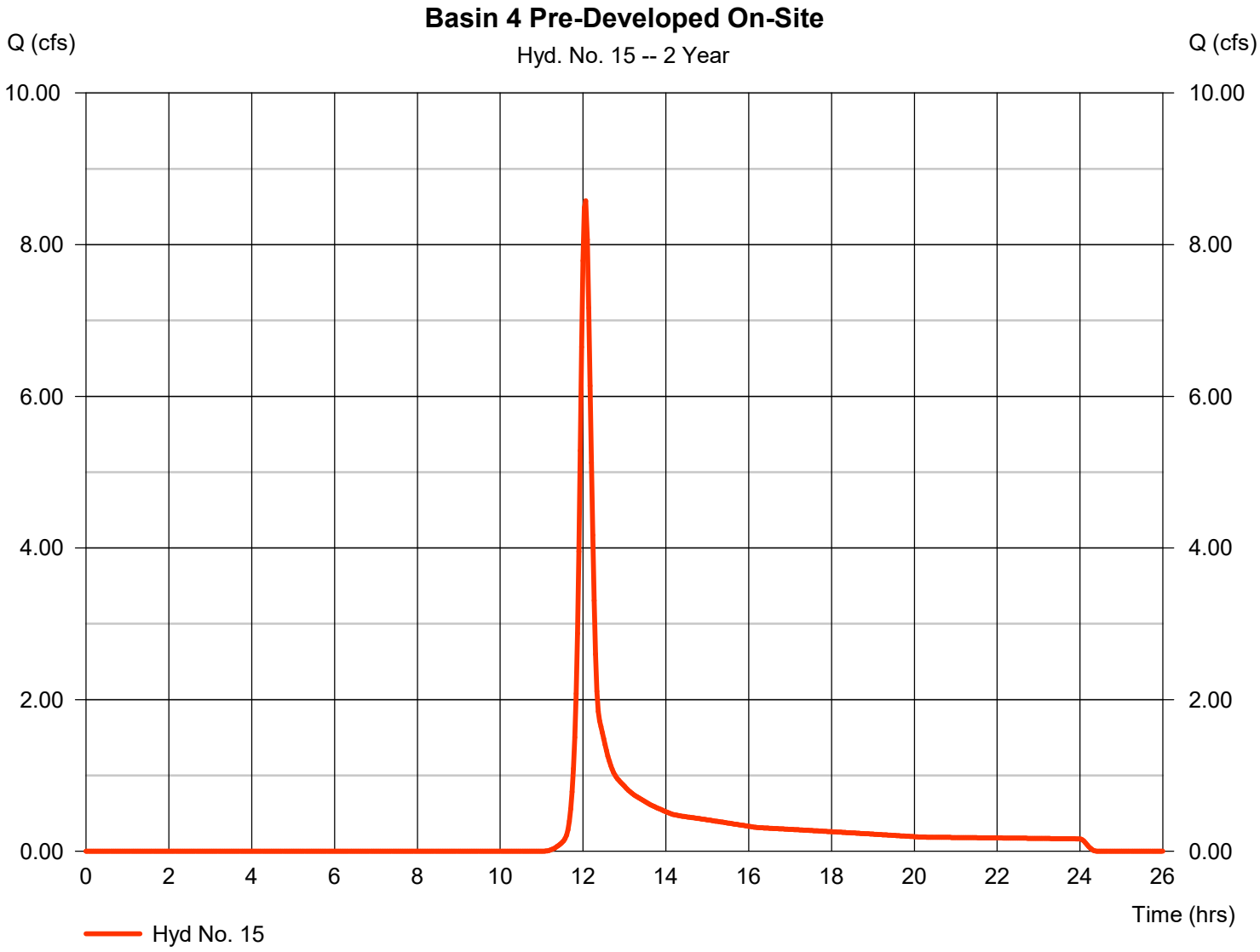
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 15

Basin 4 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 8.579 cfs
Storm frequency	= 2 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 25,371 cuft
Drainage area	= 8.140 ac	Curve number	= 74.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.20 min
Total precip.	= 2.90 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



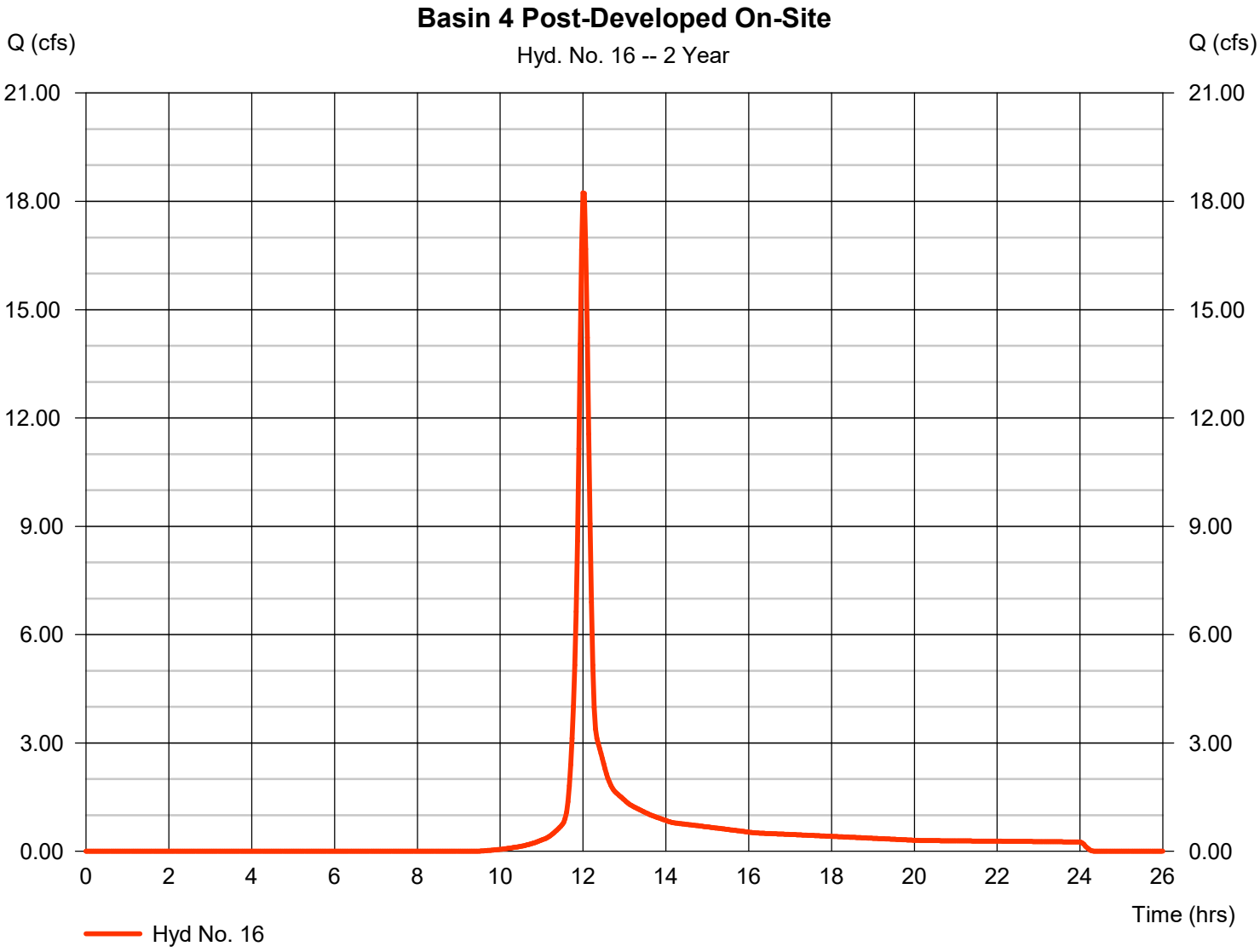
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 16

Basin 4 Post-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	18.23 cfs
Storm frequency	=	2 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	47,634 cuft
Drainage area	=	10.030 ac	Curve number	=	81.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	2.90 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

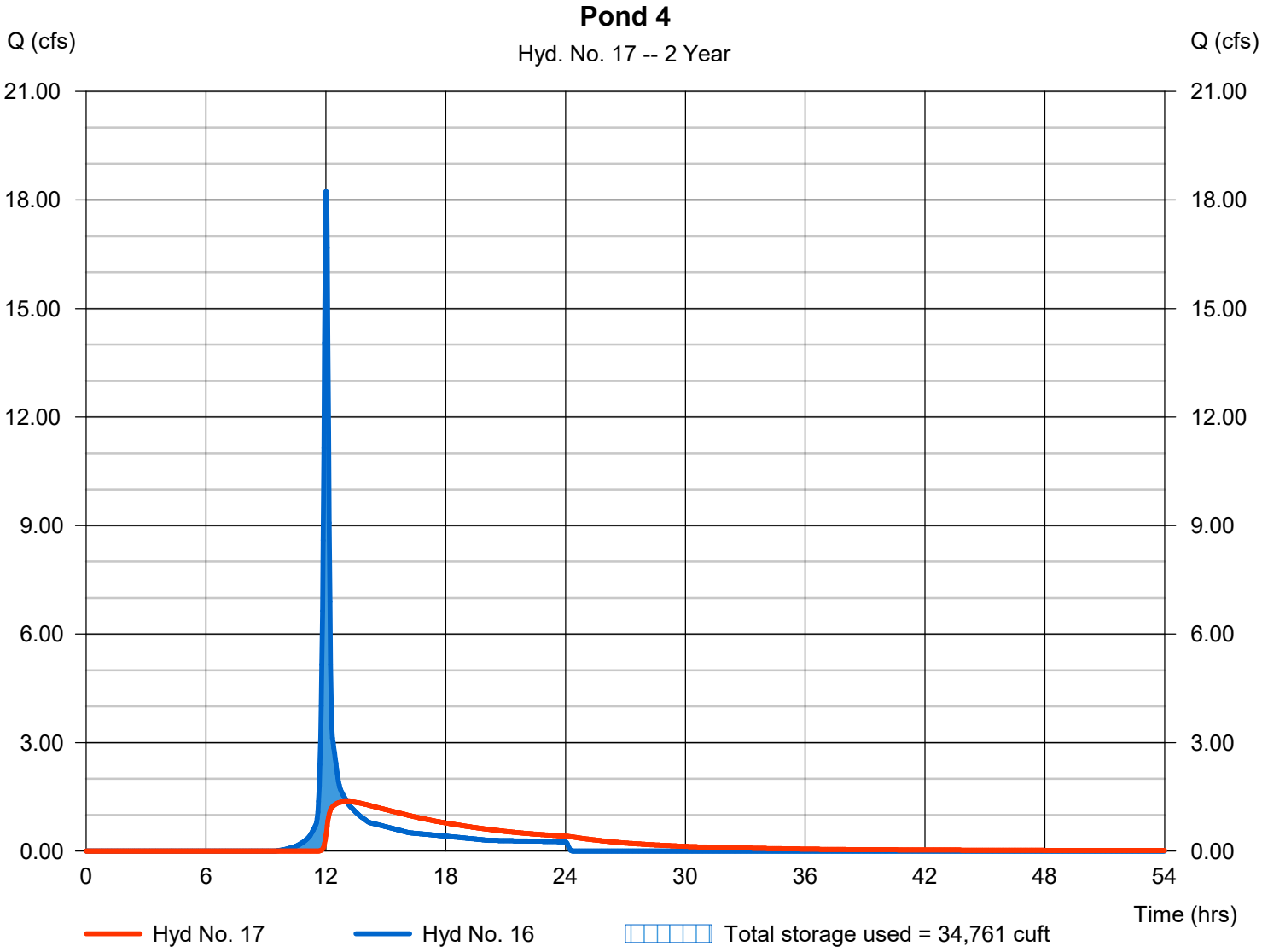
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 17

Pond 4

Hydrograph type	=	Reservoir	Peak discharge	=	1.368 cfs
Storm frequency	=	2 yrs	Time to peak	=	13.07 hrs
Time interval	=	2 min	Hyd. volume	=	45,496 cuft
Inflow hyd. No.	=	16 - Basin 4 Post-Developed On-Site	Max. Elevation	=	704.58 ft
Reservoir name	=	Pond 4	Max. Storage	=	34,761 cuft

Storage Indication method used. Wet pond routing start elevation = 703.50 ft.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	21.89	2	728	98,504	------	------	------	Basin 1 Pre-Developed On-Site
2	SCS Runoff	43.13	2	728	158,999	------	------	------	Basin 1 Off-Site Pre-Developed
3	Manual	1.550	2	740	19,835	------	------	------	Basin 1 Pre-Developed Allowable
4	Combine	44.28	2	728	178,834	2, 3	------	------	Basin 1 Pre-Developed Combined All
5	SCS Runoff	51.53	2	724	161,523	------	------	------	Basin 1 Off-Site Post-Developed
6	SCS Runoff	69.83	2	722	199,570	------	------	------	Basin 1 On-Site Post-Developed
7	Combine	121.09	2	724	361,093	5, 6	------	------	Basin 1 Combined
8	Reservoir	33.14	2	740	355,938	7	634.12	181,223	Pond 1
9	SCS Runoff	32.00	2	724	94,551	------	------	------	Basin 2 Pre-Developed On-Site
10	SCS Runoff	63.01	2	720	163,430	------	------	------	Basin 2 Post-Developed On-Site
11	Reservoir	3.803	2	800	158,020	10	635.33	113,406	Pond 2
12	SCS Runoff	31.22	2	722	88,431	------	------	------	Basin 3 Pre-Developed On-Site
13	SCS Runoff	46.00	2	720	119,466	------	------	------	Basin 3 Post-Developed On-Site
14	Reservoir	8.662	2	736	117,444	13	656.86	66,605	Pond 3
15	SCS Runoff	13.56	2	722	39,002	------	------	------	Basin 4 Pre-Developed On-Site
16	SCS Runoff	26.45	2	720	68,615	------	------	------	Basin 4 Post-Developed On-Site
17	Reservoir	2.406	2	762	66,477	16	705.04	45,534	Pond 4

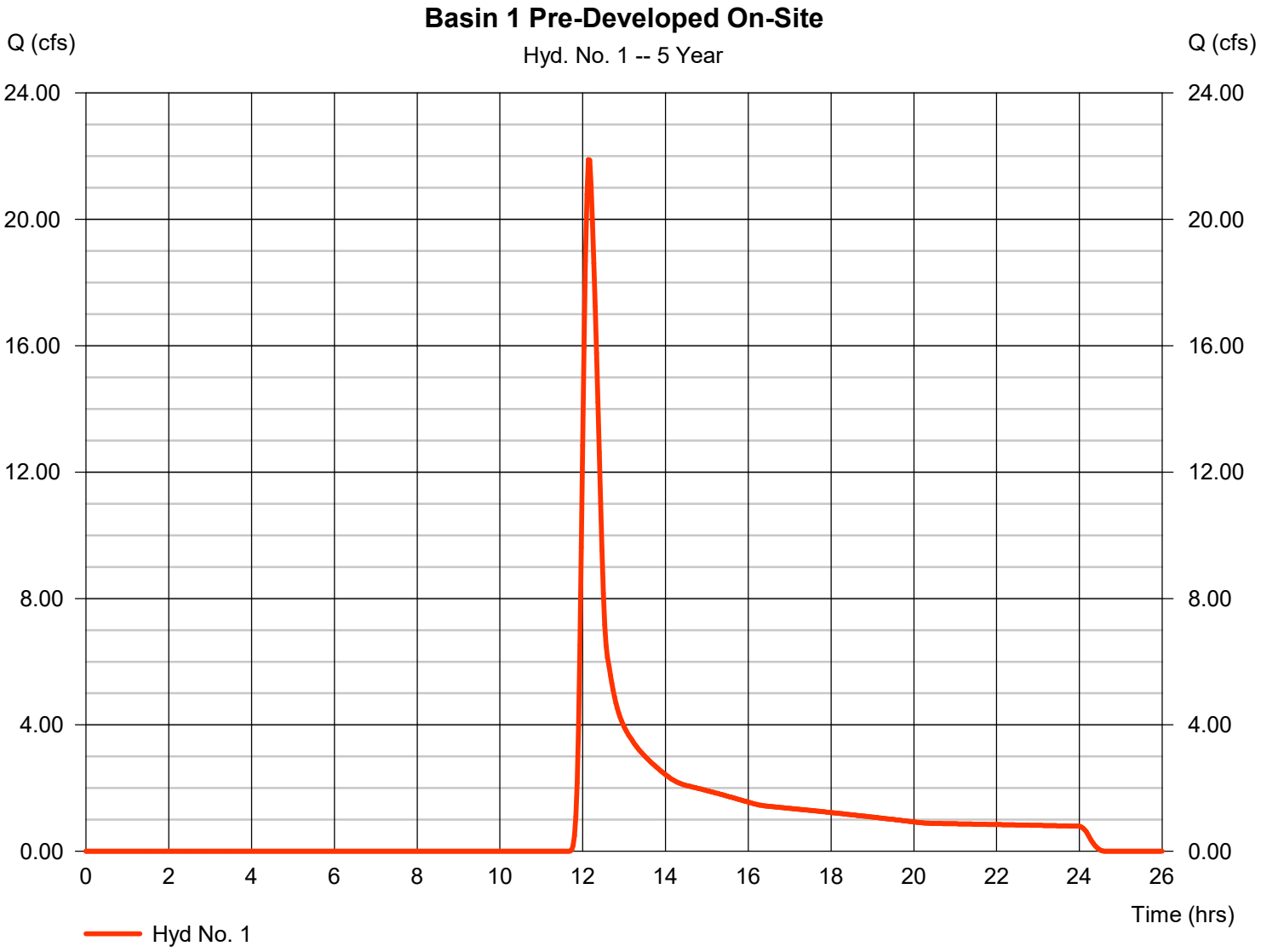
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 1

Basin 1 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 21.89 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 98,504 cuft
Drainage area	= 40.220 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.40 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



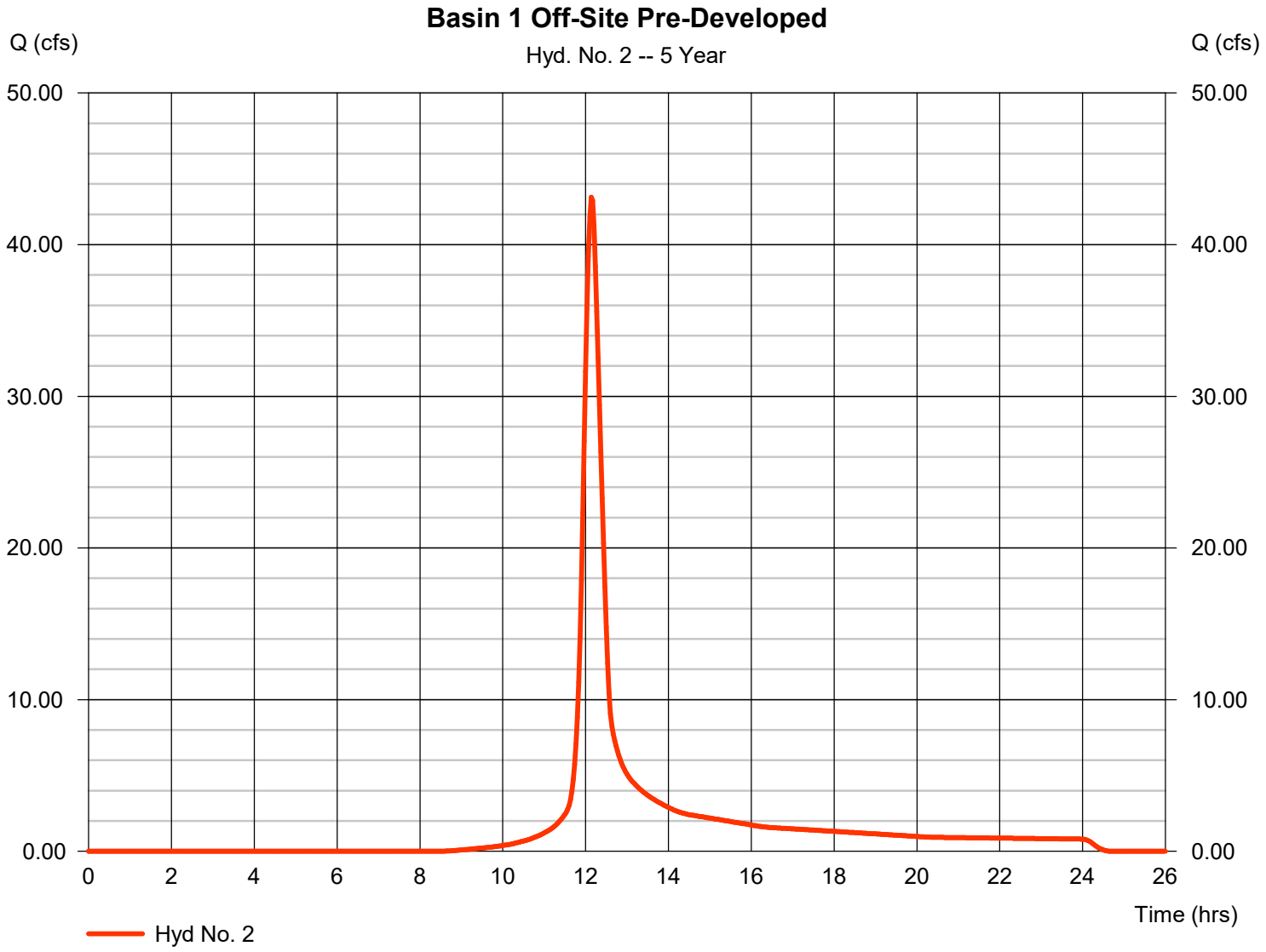
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 2

Basin 1 Off-Site Pre-Developed

Hydrograph type	=	SCS Runoff	Peak discharge	=	43.13 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.13 hrs
Time interval	=	2 min	Hyd. volume	=	158,999 cuft
Drainage area	=	24.450 ac	Curve number	=	81.4
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	23.50 min
Total precip.	=	3.60 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



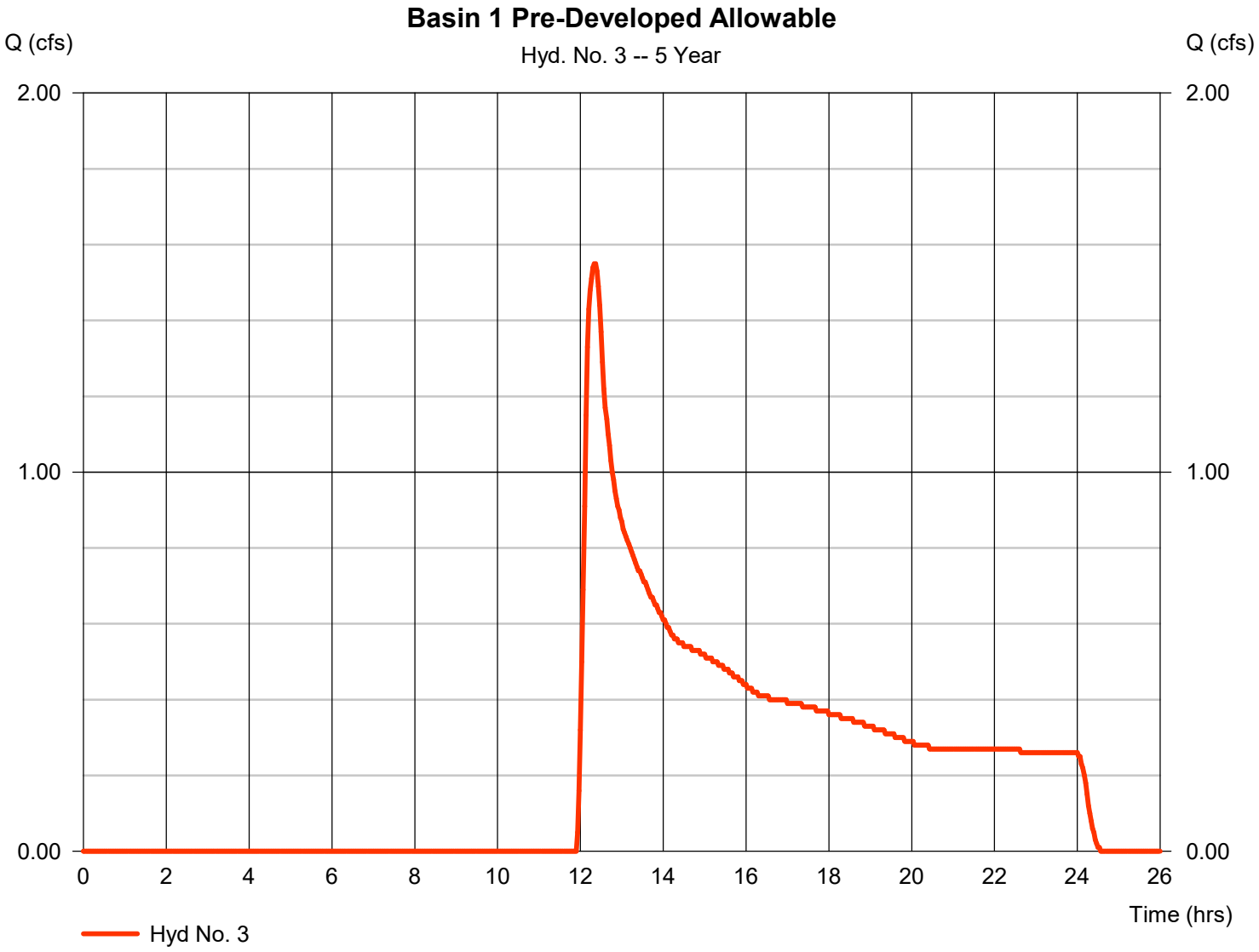
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 3

Basin 1 Pre-Developed Allowable

Hydrograph type	= Manual	Peak discharge	= 1.550 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 19,835 cuft



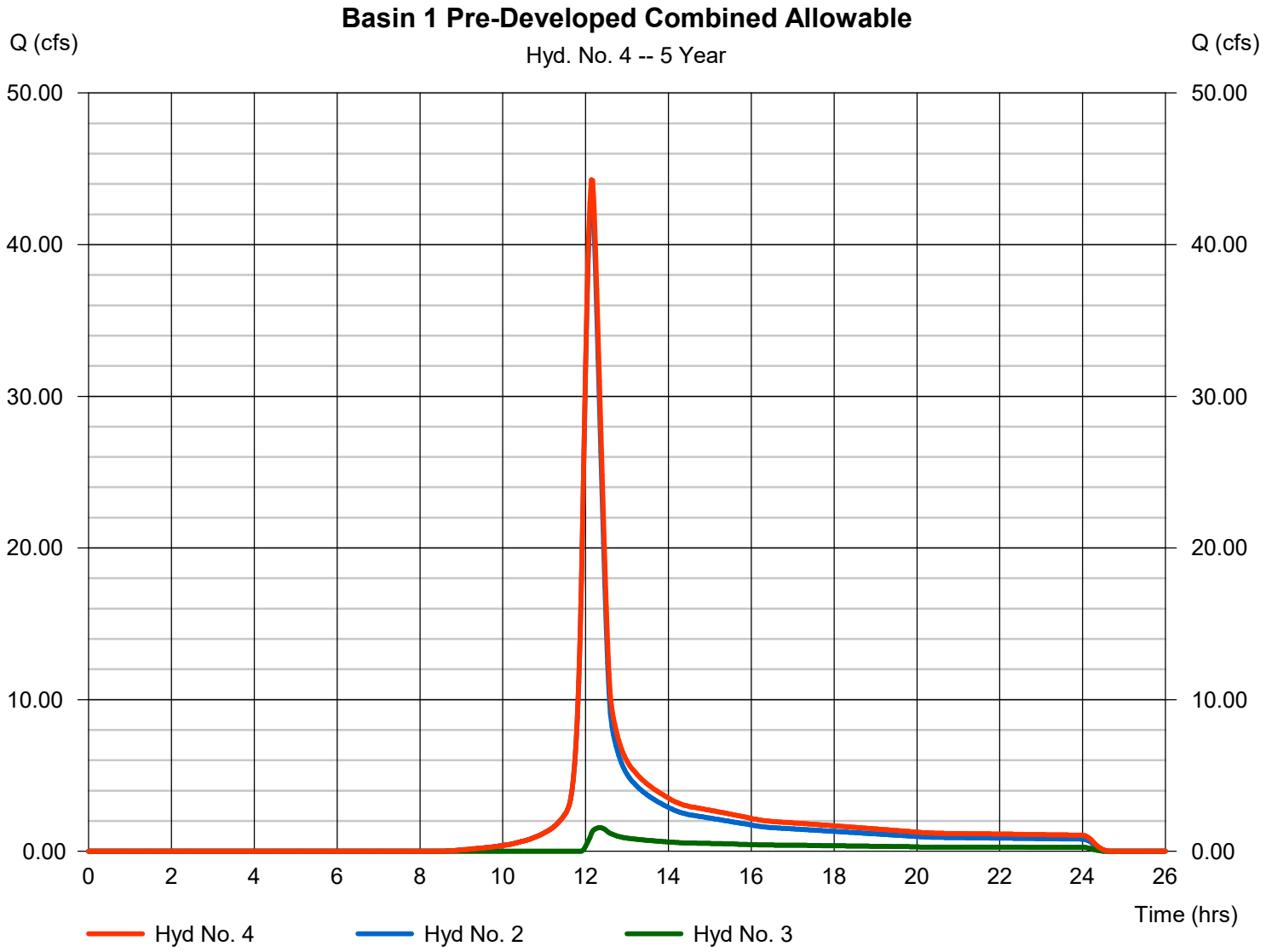
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 4

Basin 1 Pre-Developed Combined Allowable

Hydrograph type	= Combine	Peak discharge	= 44.28 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 178,834 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 24.450 ac



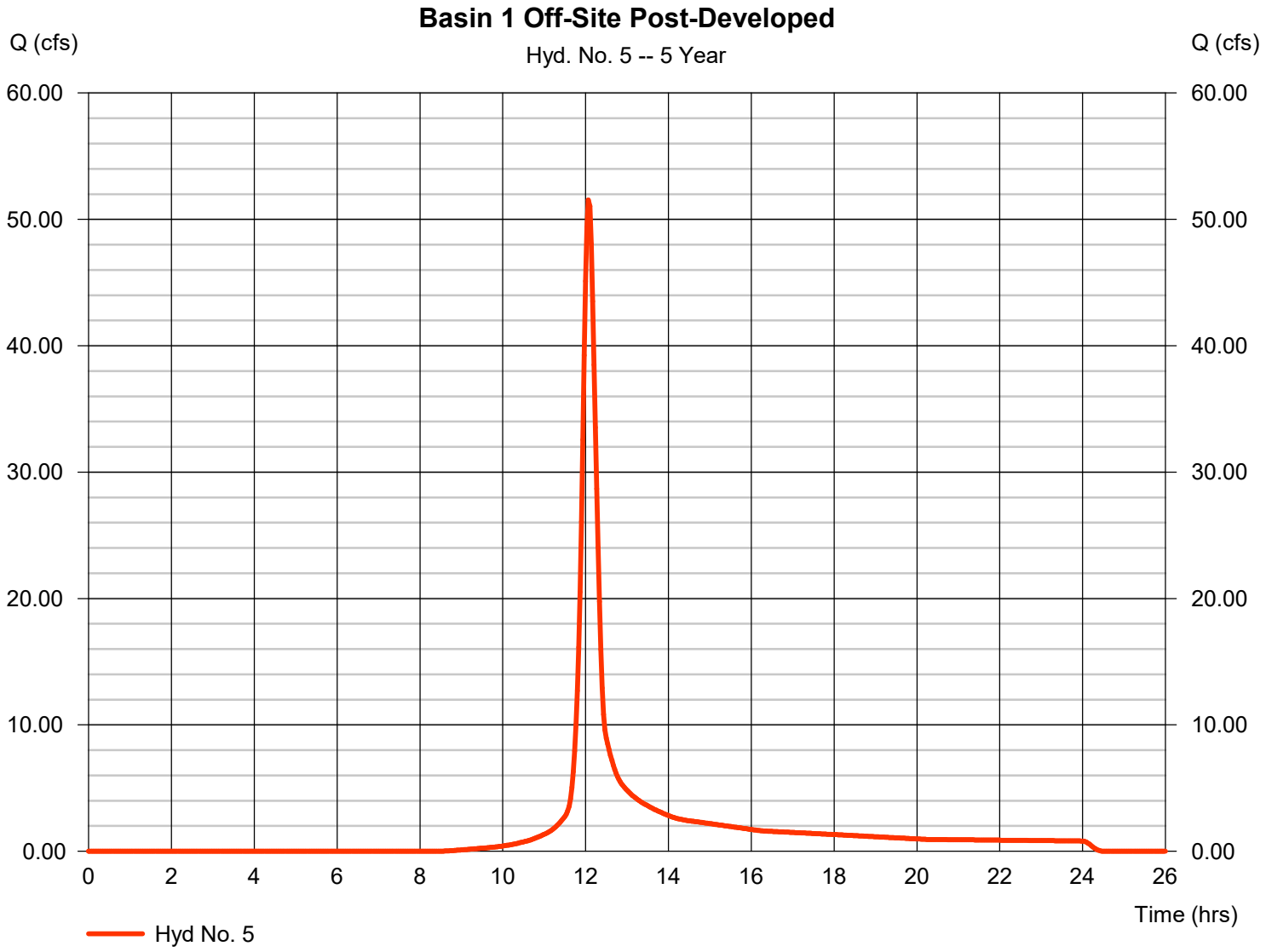
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 5

Basin 1 Off-Site Post-Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 51.53 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 161,523 cuft
Drainage area	= 24.450 ac	Curve number	= 81.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.00 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



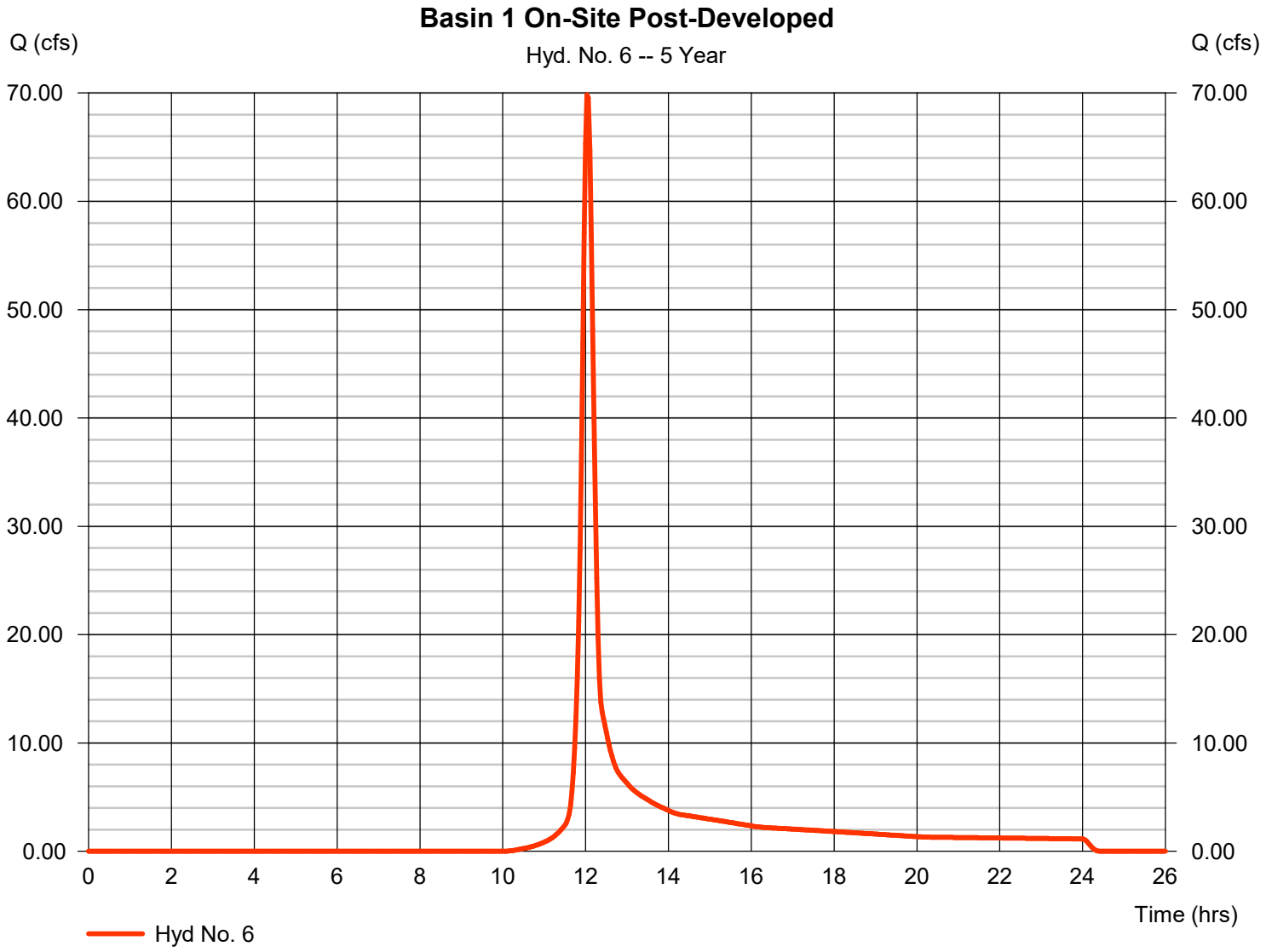
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 6

Basin 1 On-Site Post-Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 69.83 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 199,570 cuft
Drainage area	= 39.750 ac	Curve number	= 75.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



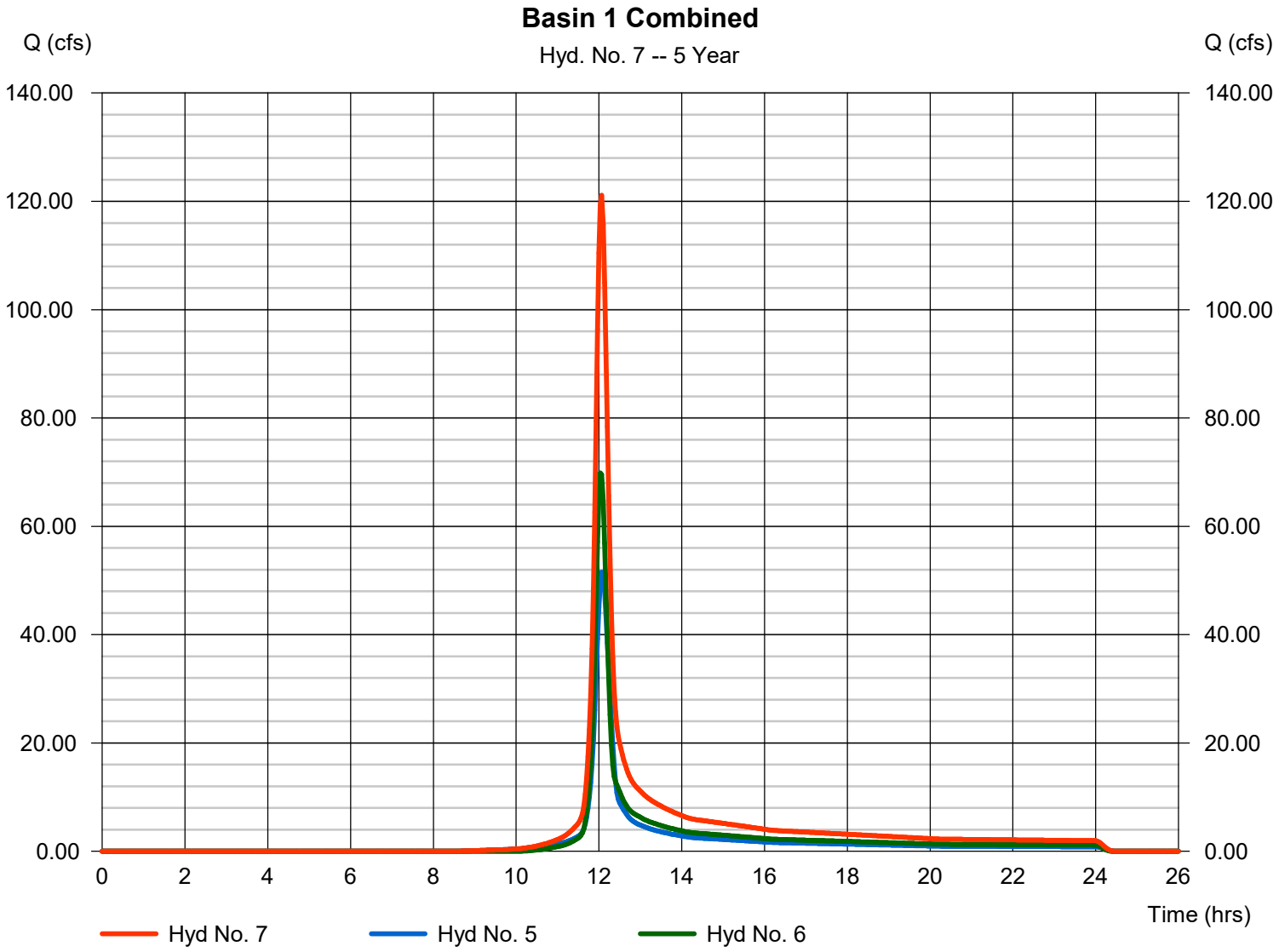
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 7

Basin 1 Combined

Hydrograph type	= Combine	Peak discharge	= 121.09 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 361,093 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 64.200 ac



Hydrograph Report

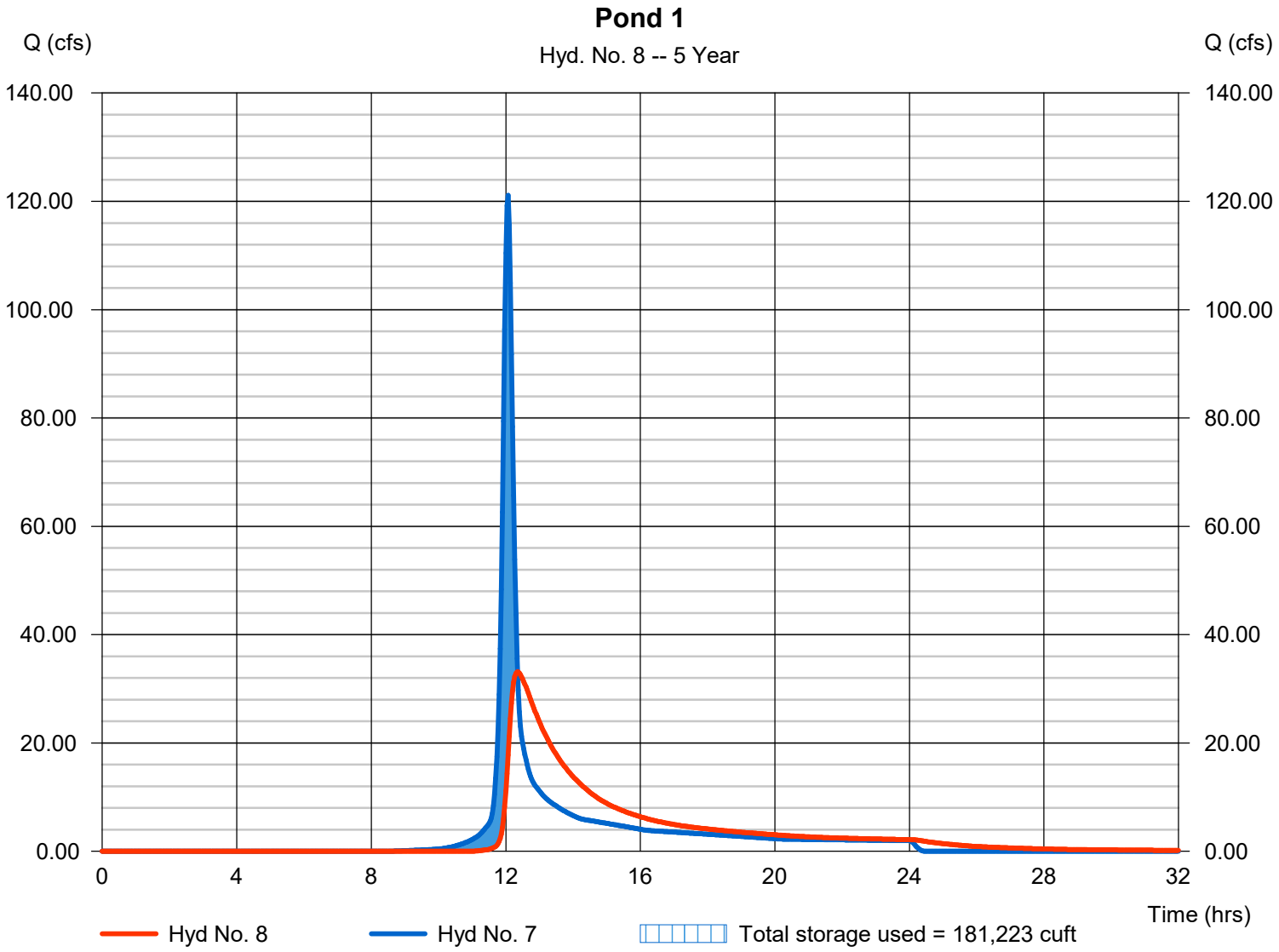
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 8

Pond 1

Hydrograph type	= Reservoir	Peak discharge	= 33.14 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 355,938 cuft
Inflow hyd. No.	= 7 - Basin 1 Combined	Max. Elevation	= 634.12 ft
Reservoir name	= Pond 1	Max. Storage	= 181,223 cuft

Storage Indication method used. Wet pond routing start elevation = 631.80 ft.



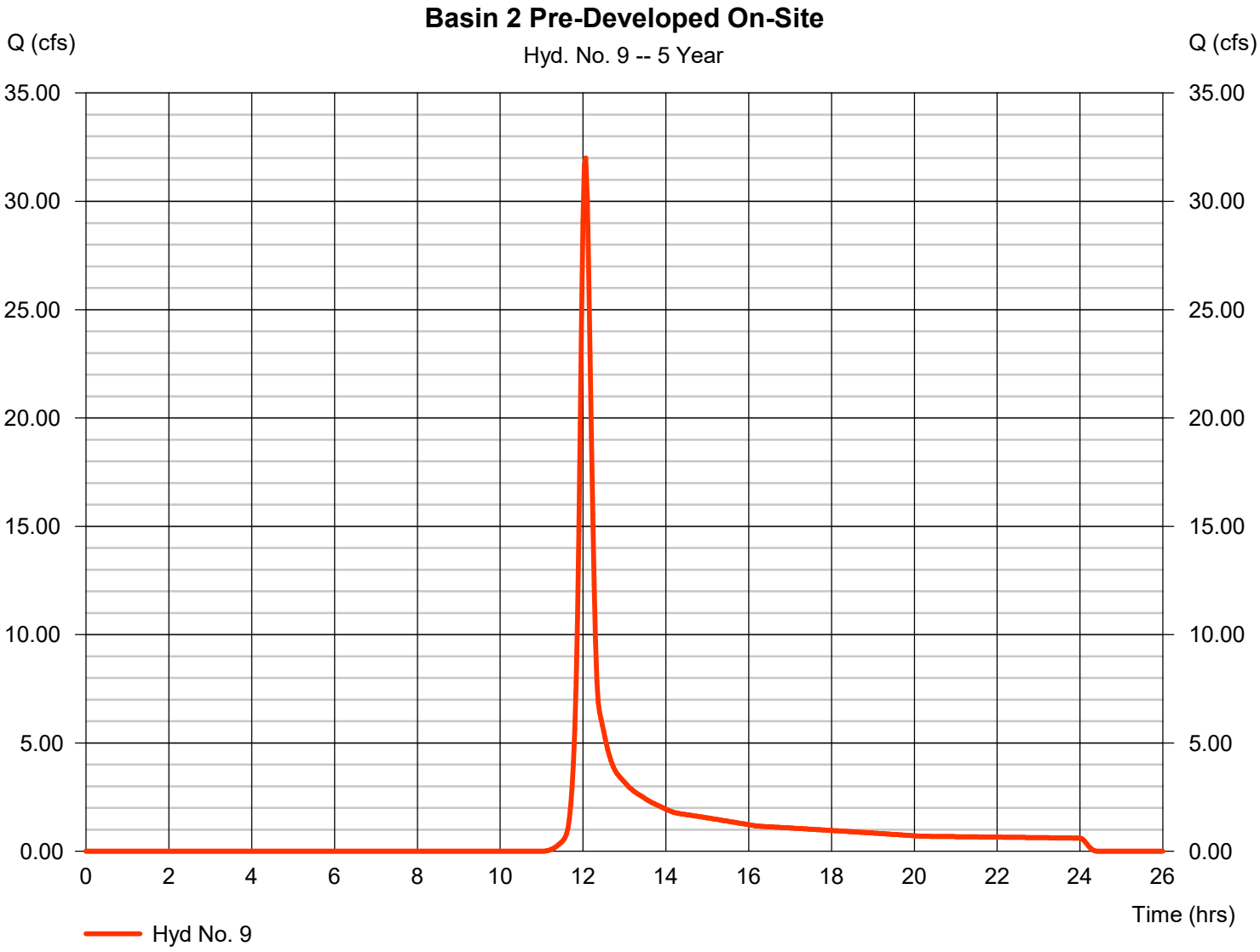
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 9

Basin 2 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 32.00 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 94,551 cuft
Drainage area	= 24.310 ac	Curve number	= 70.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.40 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



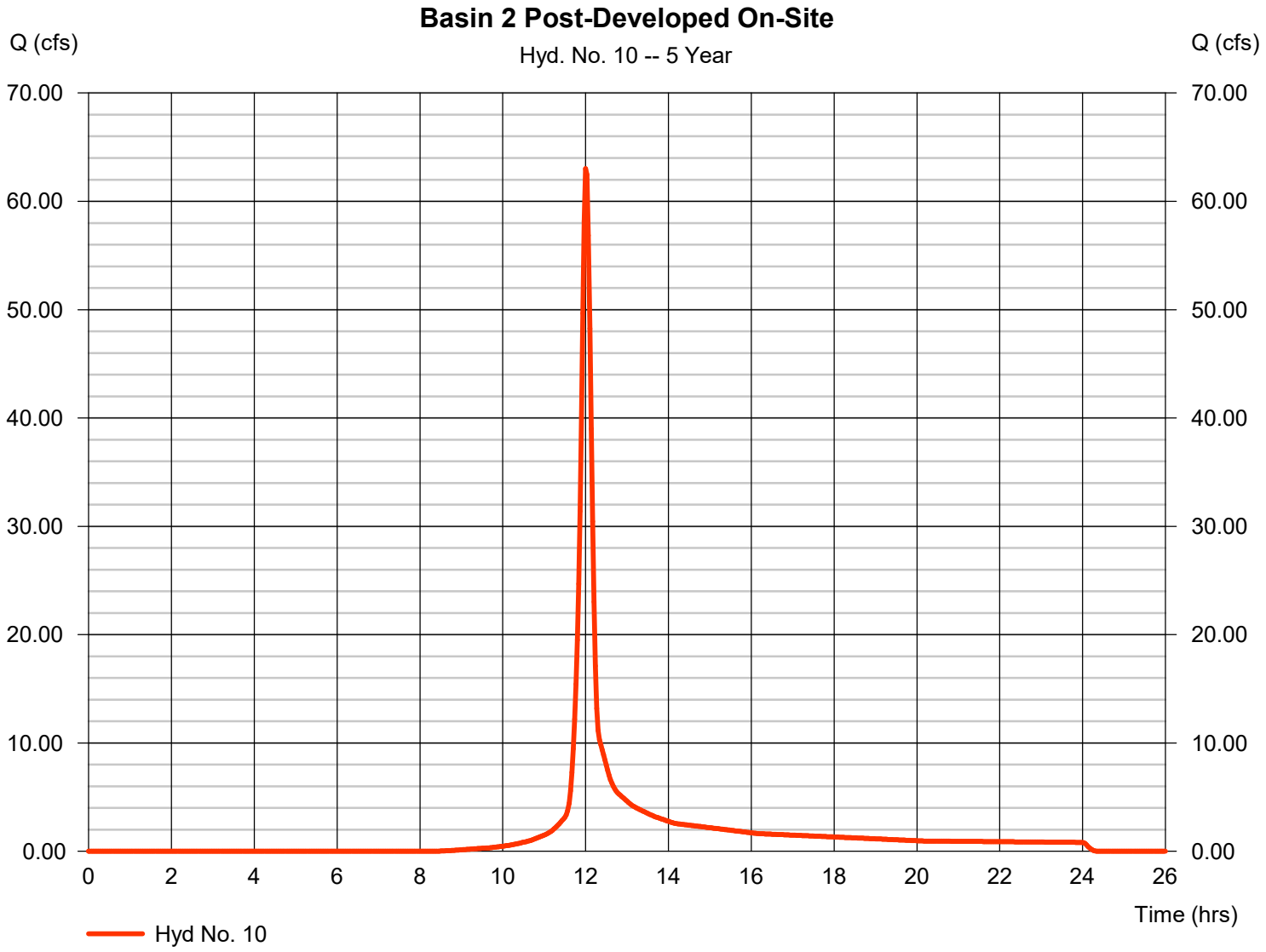
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 10

Basin 2 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 63.01 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 163,430 cuft
Drainage area	= 23.890 ac	Curve number	= 81.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

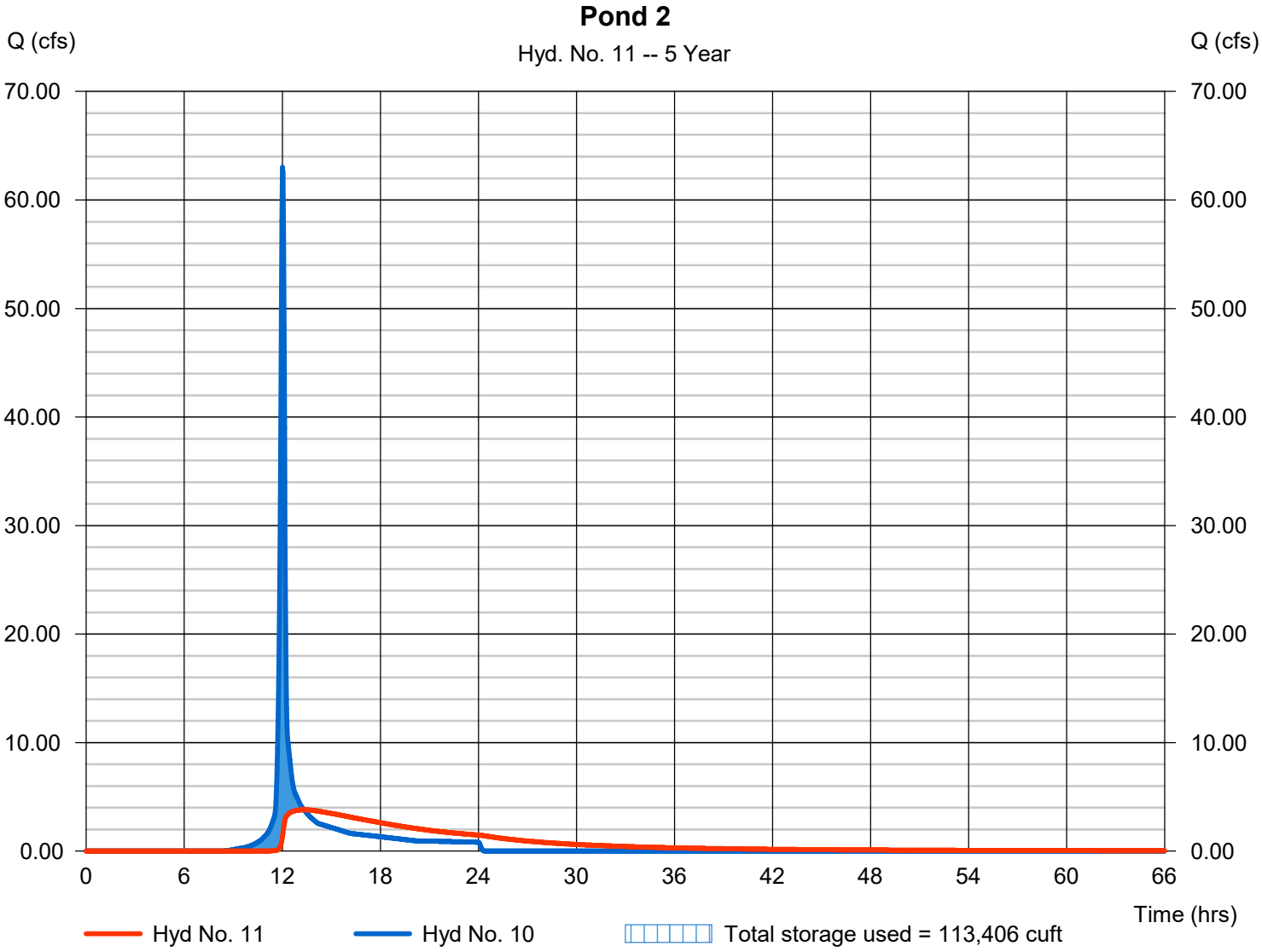
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 11

Pond 2

Hydrograph type	=	Reservoir	Peak discharge	=	3.803 cfs
Storm frequency	=	5 yrs	Time to peak	=	13.33 hrs
Time interval	=	2 min	Hyd. volume	=	158,020 cuft
Inflow hyd. No.	=	10 - Basin 2 Post-Developed On-Site	Max. Elevation	=	635.33 ft
Reservoir name	=	Pond 2	Max. Storage	=	113,406 cuft

Storage Indication method used. Wet pond routing start elevation = 633.50 ft.



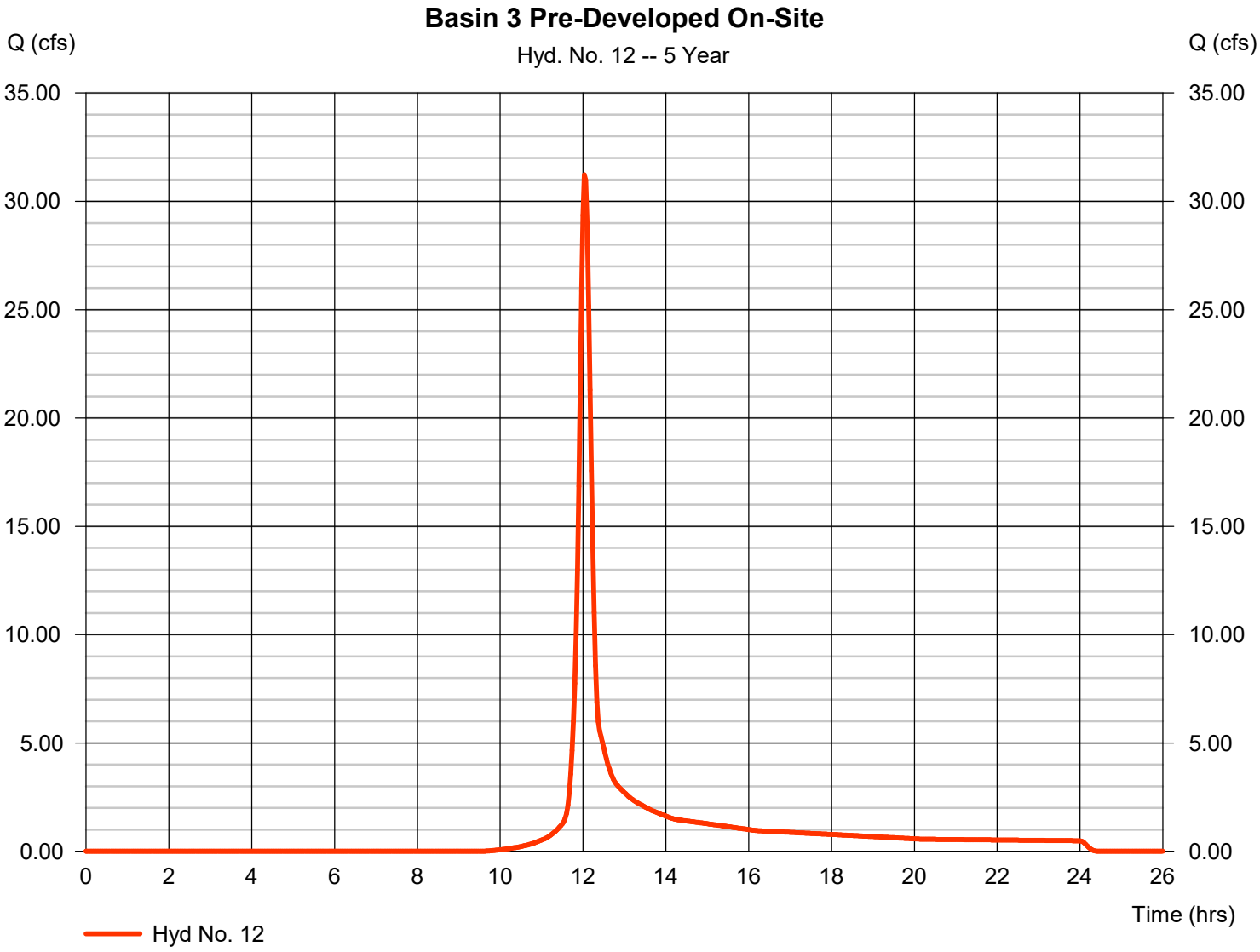
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 12

Basin 3 Pre-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	31.22 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	88,431 cuft
Drainage area	=	16.160 ac	Curve number	=	77.6
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.30 min
Total precip.	=	3.60 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



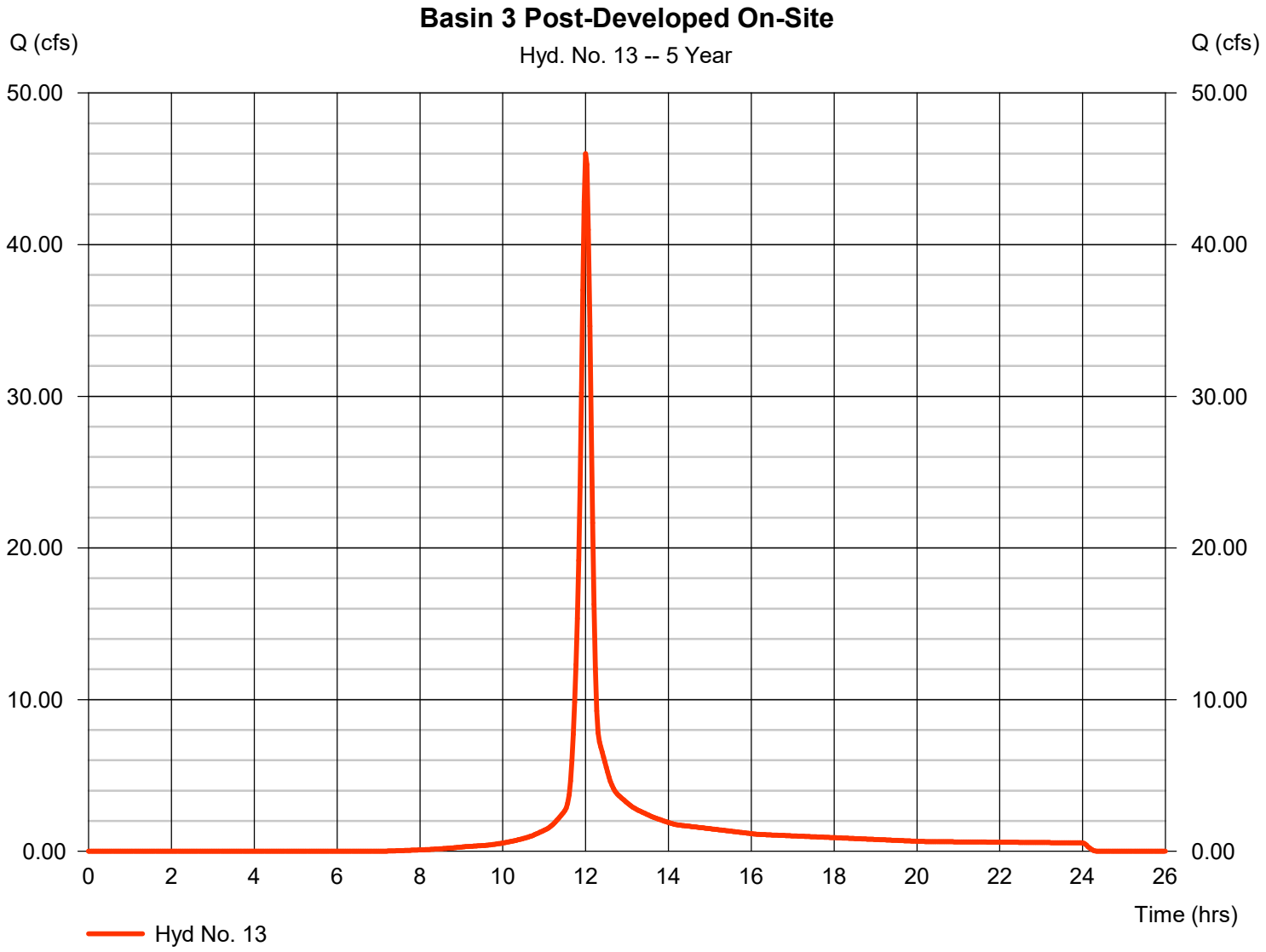
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 13

Basin 3 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 46.00 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 119,466 cuft
Drainage area	= 15.170 ac	Curve number	= 85
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

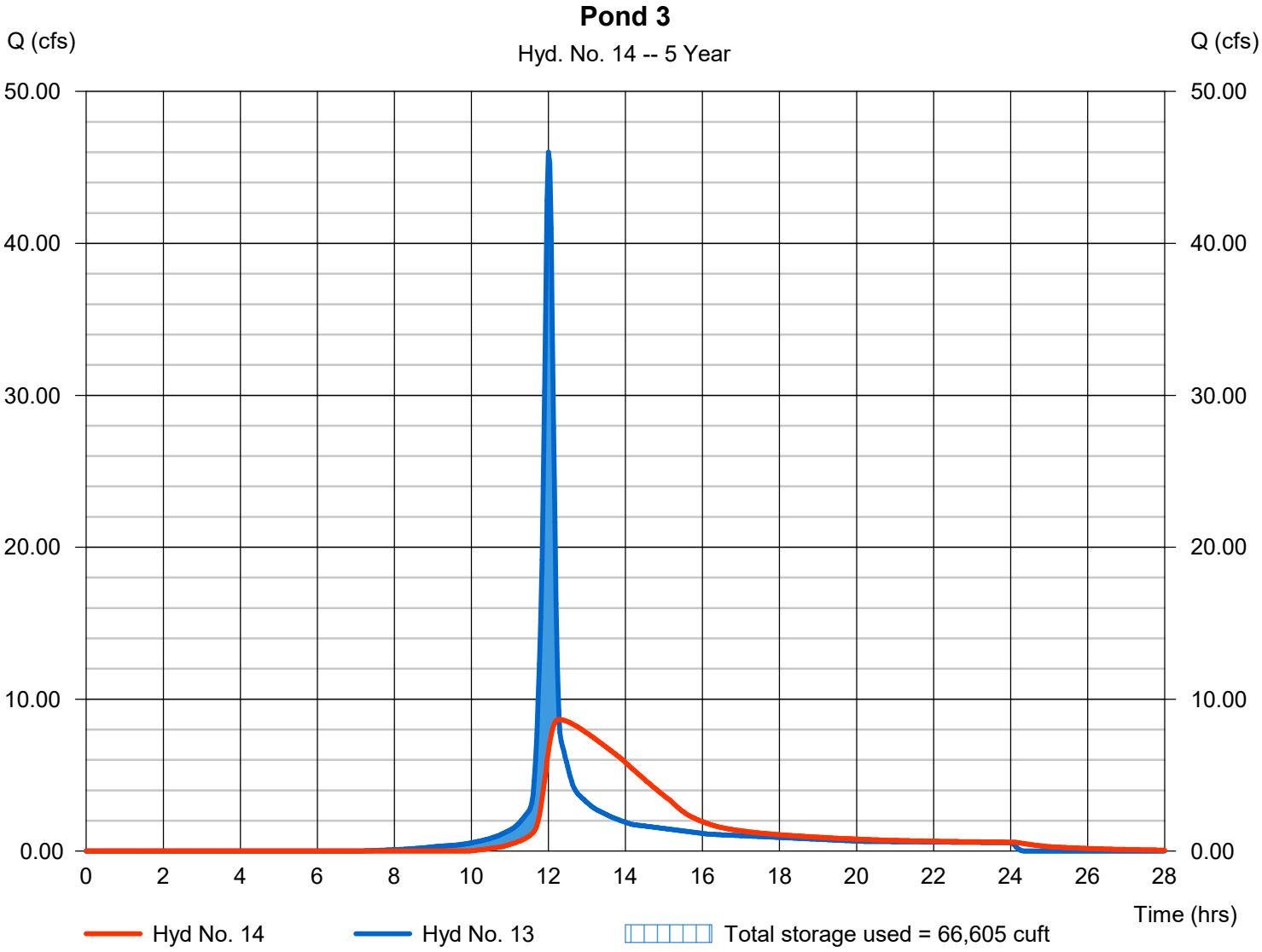
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 14

Pond 3

Hydrograph type	=	Reservoir	Peak discharge	=	8.662 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.27 hrs
Time interval	=	2 min	Hyd. volume	=	117,444 cuft
Inflow hyd. No.	=	13 - Basin 3 Post-Developed On-Site	Max. Elevation	=	656.86 ft
Reservoir name	=	Pond 3	Max. Storage	=	66,605 cuft

Storage Indication method used. Wet pond routing start elevation = 654.80 ft.



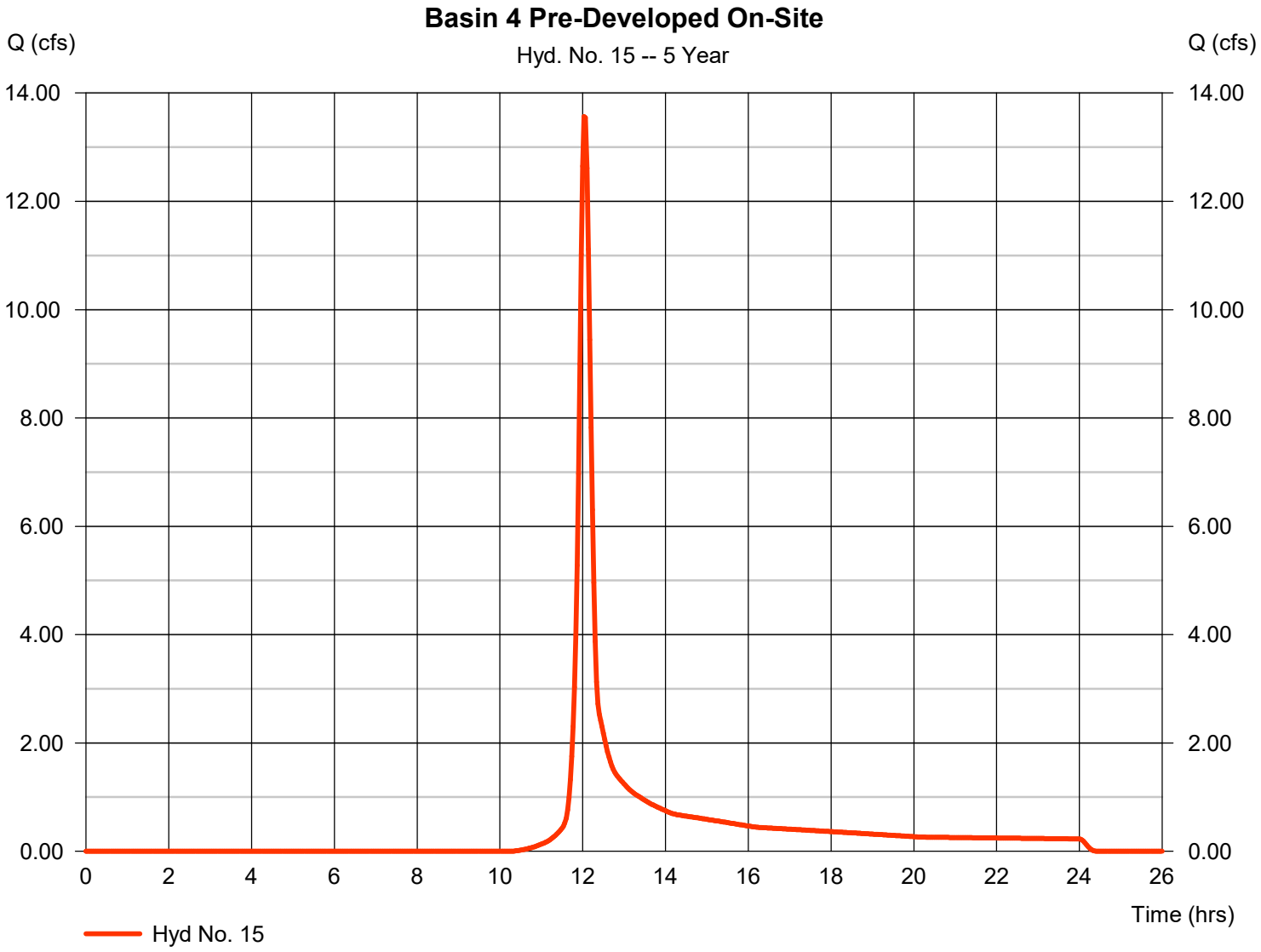
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 15

Basin 4 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 13.56 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 39,002 cuft
Drainage area	= 8.140 ac	Curve number	= 74.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.20 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



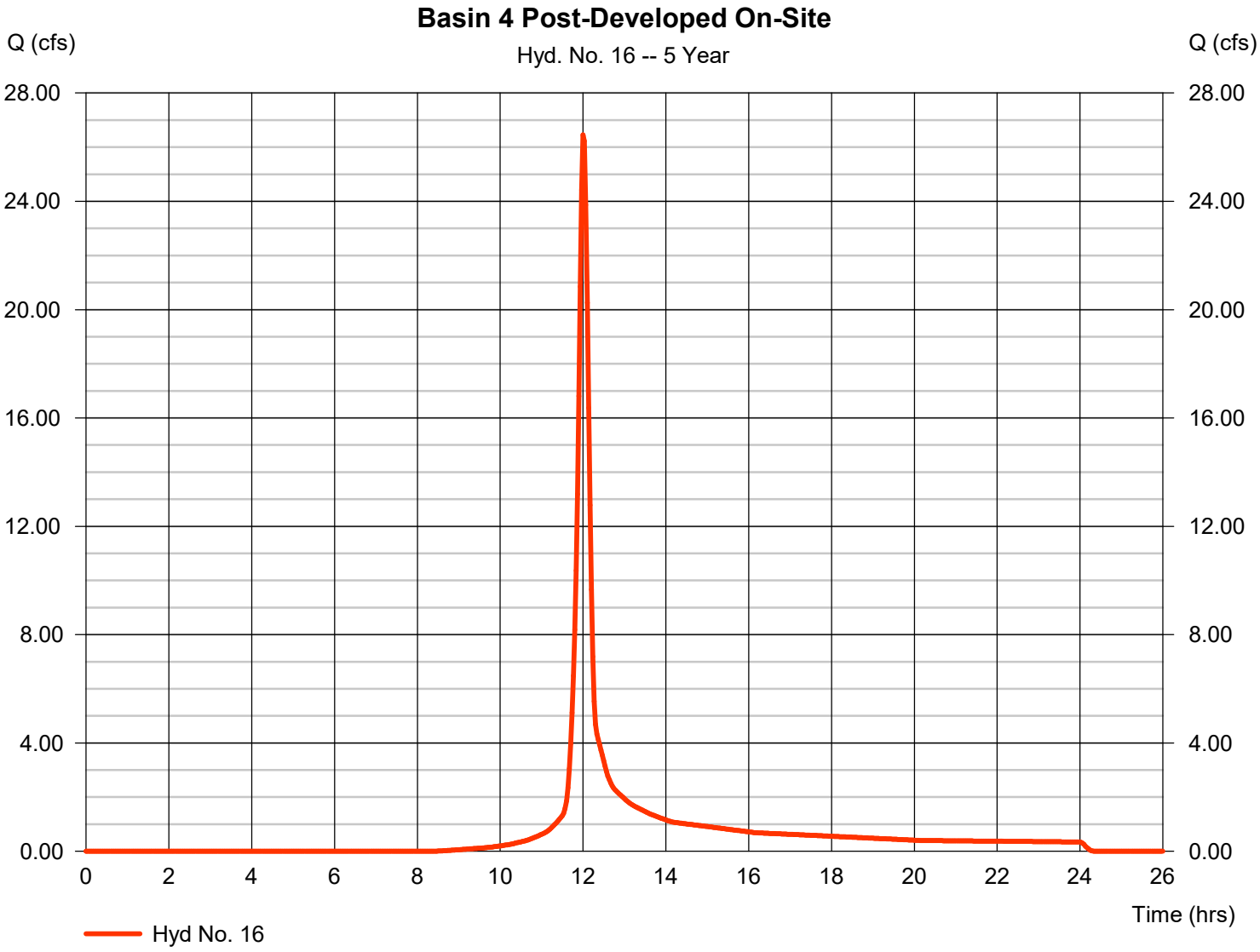
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 16

Basin 4 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 26.45 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 68,615 cuft
Drainage area	= 10.030 ac	Curve number	= 81.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

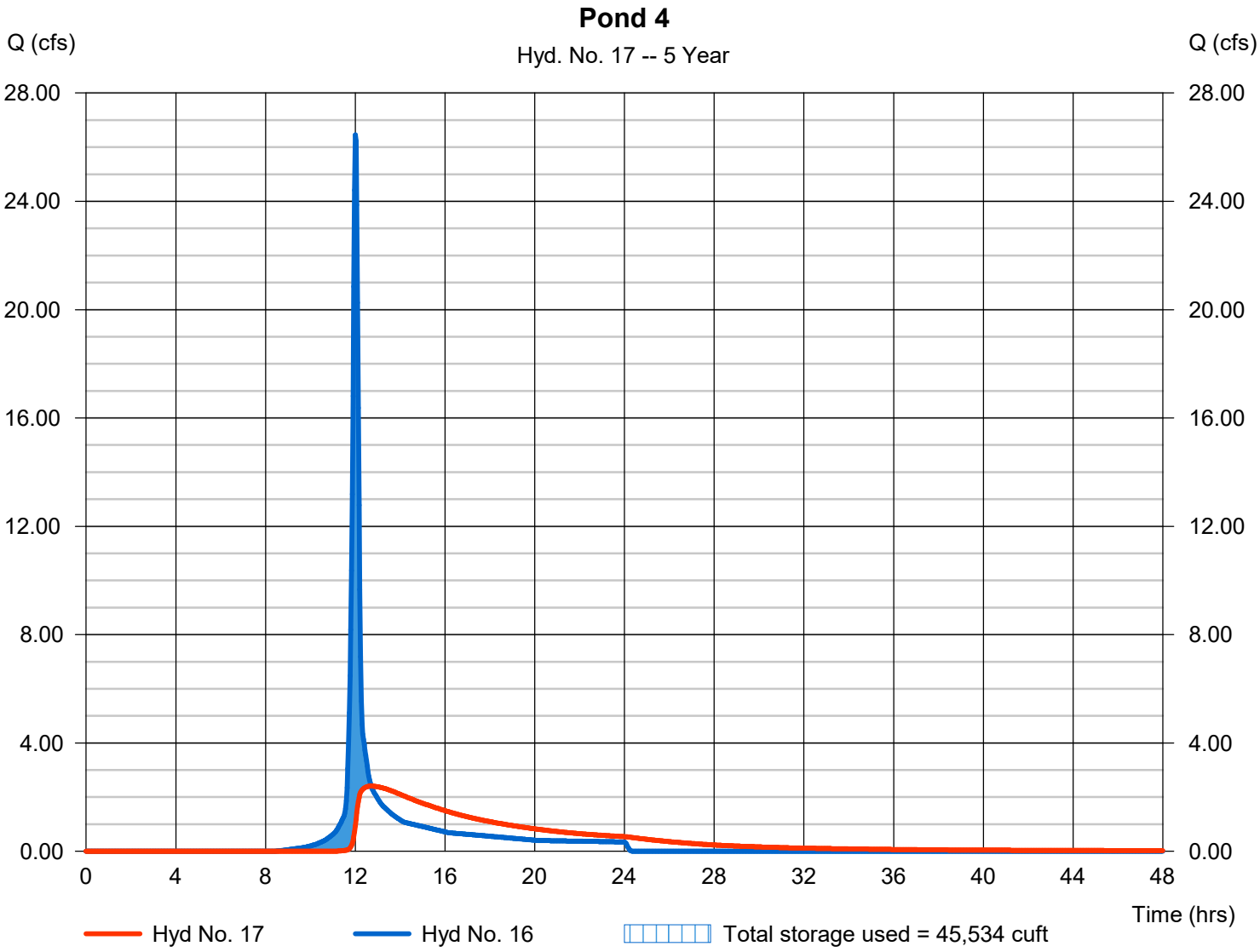
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 17

Pond 4

Hydrograph type	=	Reservoir	Peak discharge	=	2.406 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.70 hrs
Time interval	=	2 min	Hyd. volume	=	66,477 cuft
Inflow hyd. No.	=	16 - Basin 4 Post-Developed On-Site	Max. Elevation	=	705.04 ft
Reservoir name	=	Pond 4	Max. Storage	=	45,534 cuft

Storage Indication method used. Wet pond routing start elevation = 703.50 ft.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	34.57	2	728	140,360	------	------	------	Basin 1 Pre-Developed On-Site
2	SCS Runoff	54.28	2	728	199,319	------	------	------	Basin 1 Off-Site Pre-Developed
3	Manual	1.550	2	740	19,835	------	------	------	Basin 1 Pre-Developed Allowable
4	Combine	55.43	2	728	219,153	2, 3	------	------	Basin 1 Pre-Developed Combined All
5	SCS Runoff	64.76	2	724	202,482	------	------	------	Basin 1 Off-Site Post-Developed
6	SCS Runoff	91.19	2	722	257,705	------	------	------	Basin 1 On-Site Post-Developed
7	Combine	155.10	2	724	460,188	5, 6	------	------	Basin 1 Combined
8	Reservoir	46.24	2	740	455,033	7	634.68	219,988	Pond 1
9	SCS Runoff	43.48	2	724	125,966	------	------	------	Basin 2 Pre-Developed On-Site
10	SCS Runoff	78.97	2	720	204,774	------	------	------	Basin 2 Post-Developed On-Site
11	Reservoir	5.269	2	786	199,323	10	635.76	136,344	Pond 2
12	SCS Runoff	40.19	2	722	113,020	------	------	------	Basin 3 Pre-Developed On-Site
13	SCS Runoff	56.45	2	720	147,210	------	------	------	Basin 3 Post-Developed On-Site
14	Reservoir	9.753	2	738	145,188	13	657.30	79,440	Pond 3
15	SCS Runoff	17.86	2	722	50,648	------	------	------	Basin 4 Pre-Developed On-Site
16	SCS Runoff	33.16	2	720	85,972	------	------	------	Basin 4 Post-Developed On-Site
17	Reservoir	3.316	2	756	83,834	16	705.38	54,652	Pond 4

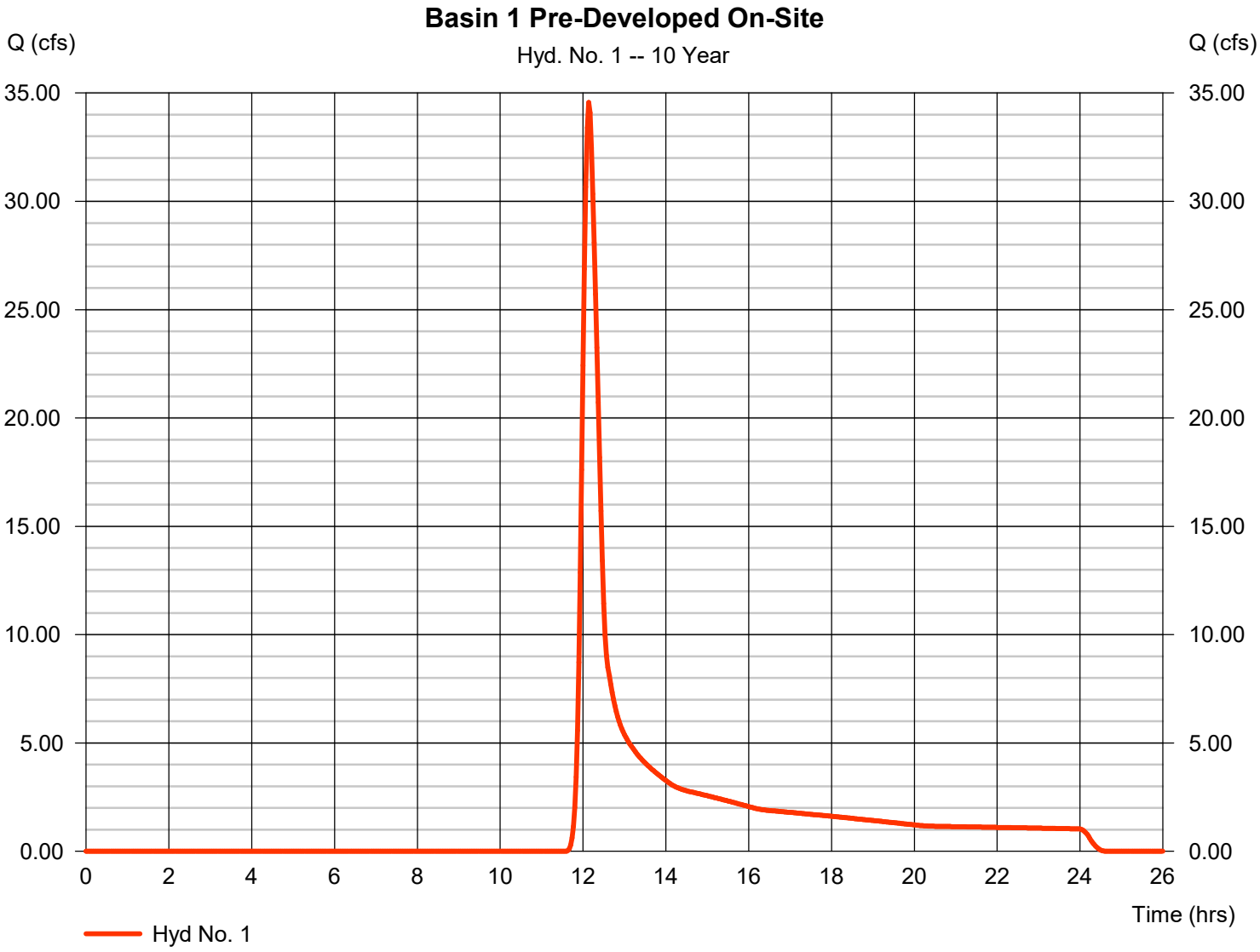
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 1

Basin 1 Pre-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	34.57 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.13 hrs
Time interval	=	2 min	Hyd. volume	=	140,360 cuft
Drainage area	=	40.220 ac	Curve number	=	62
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	22.40 min
Total precip.	=	4.15 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



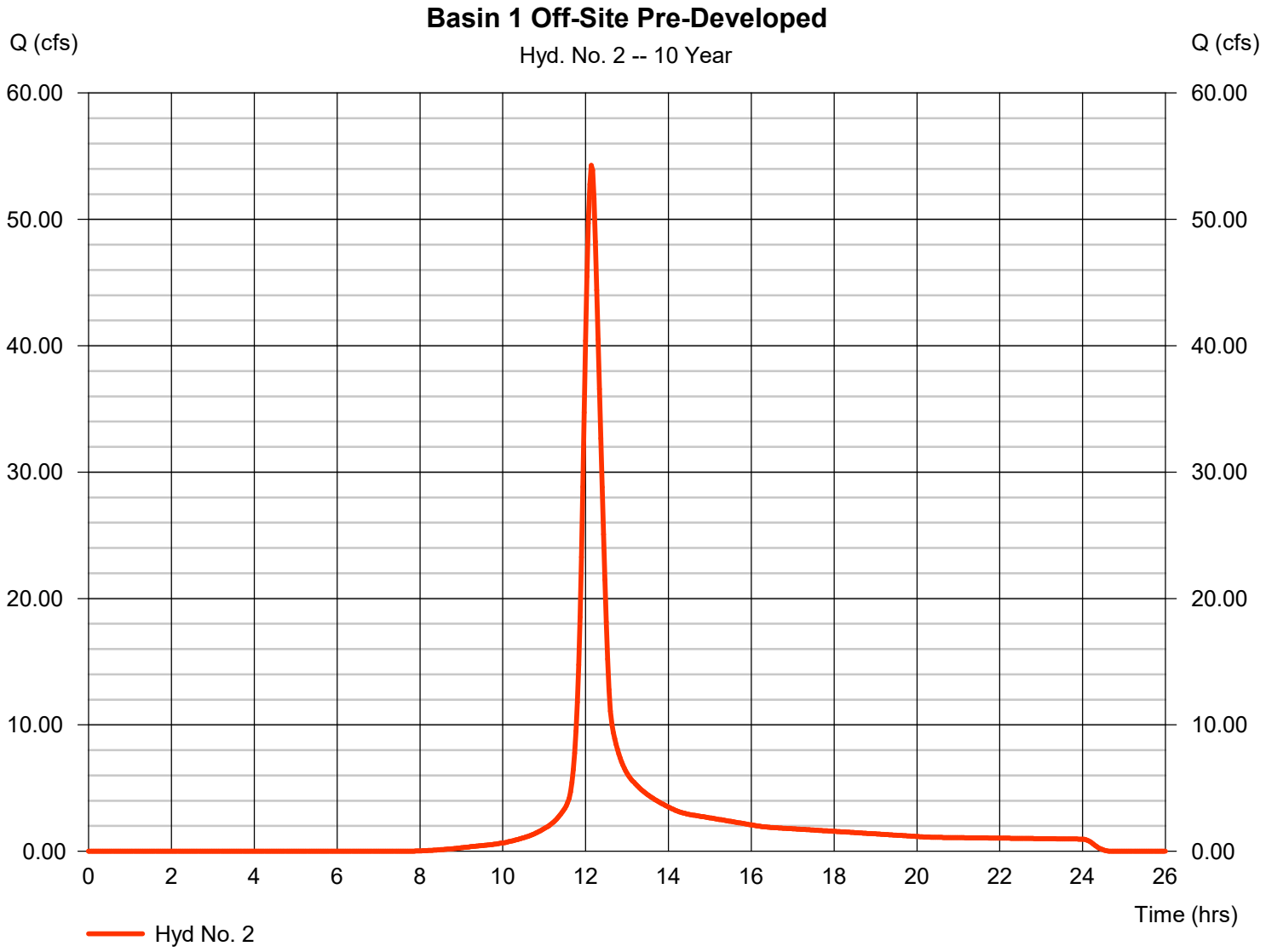
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 2

Basin 1 Off-Site Pre-Developed

Hydrograph type	=	SCS Runoff	Peak discharge	=	54.28 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.13 hrs
Time interval	=	2 min	Hyd. volume	=	199,319 cuft
Drainage area	=	24.450 ac	Curve number	=	81.4
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	23.50 min
Total precip.	=	4.15 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



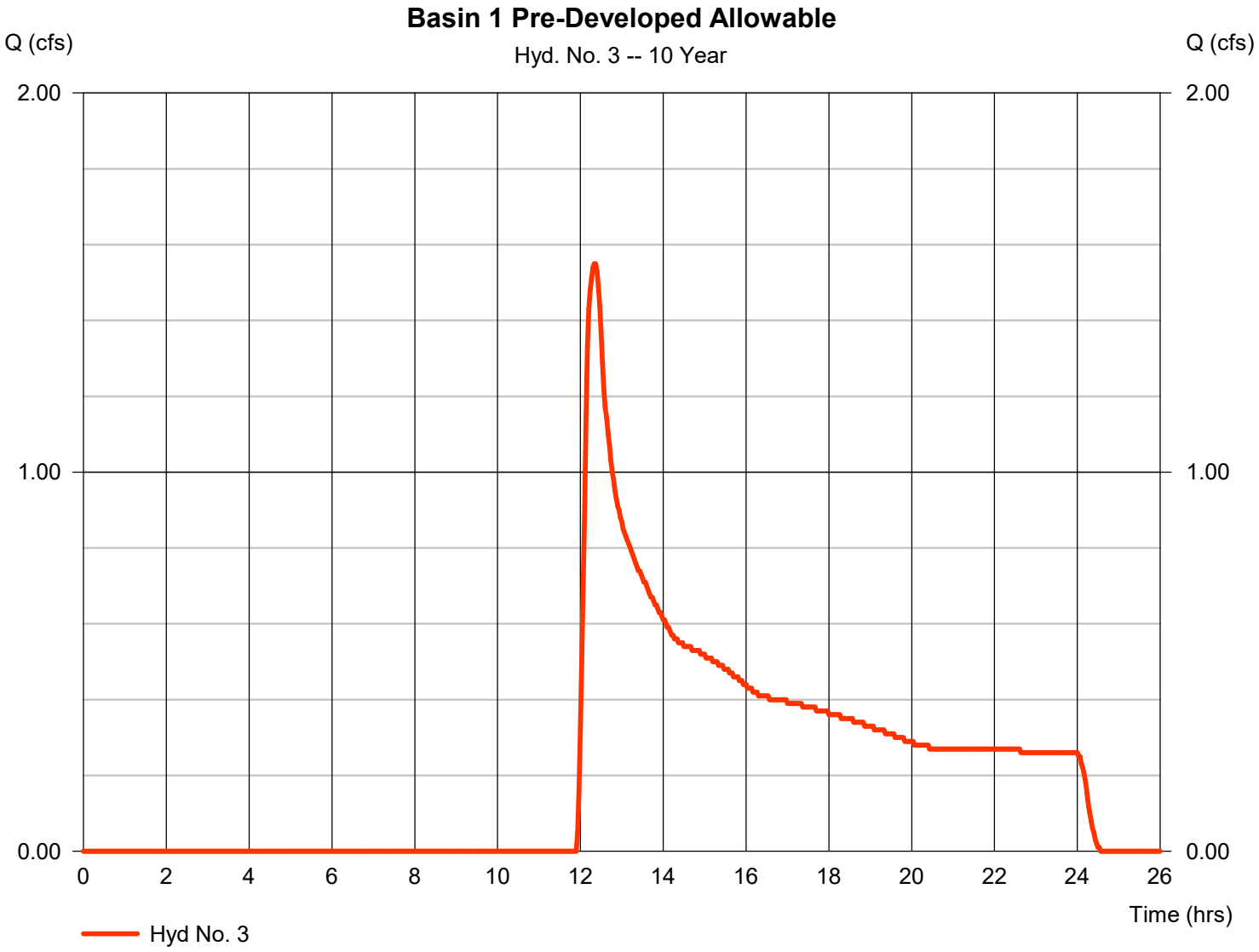
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 3

Basin 1 Pre-Developed Allowable

Hydrograph type	= Manual	Peak discharge	= 1.550 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 19,835 cuft



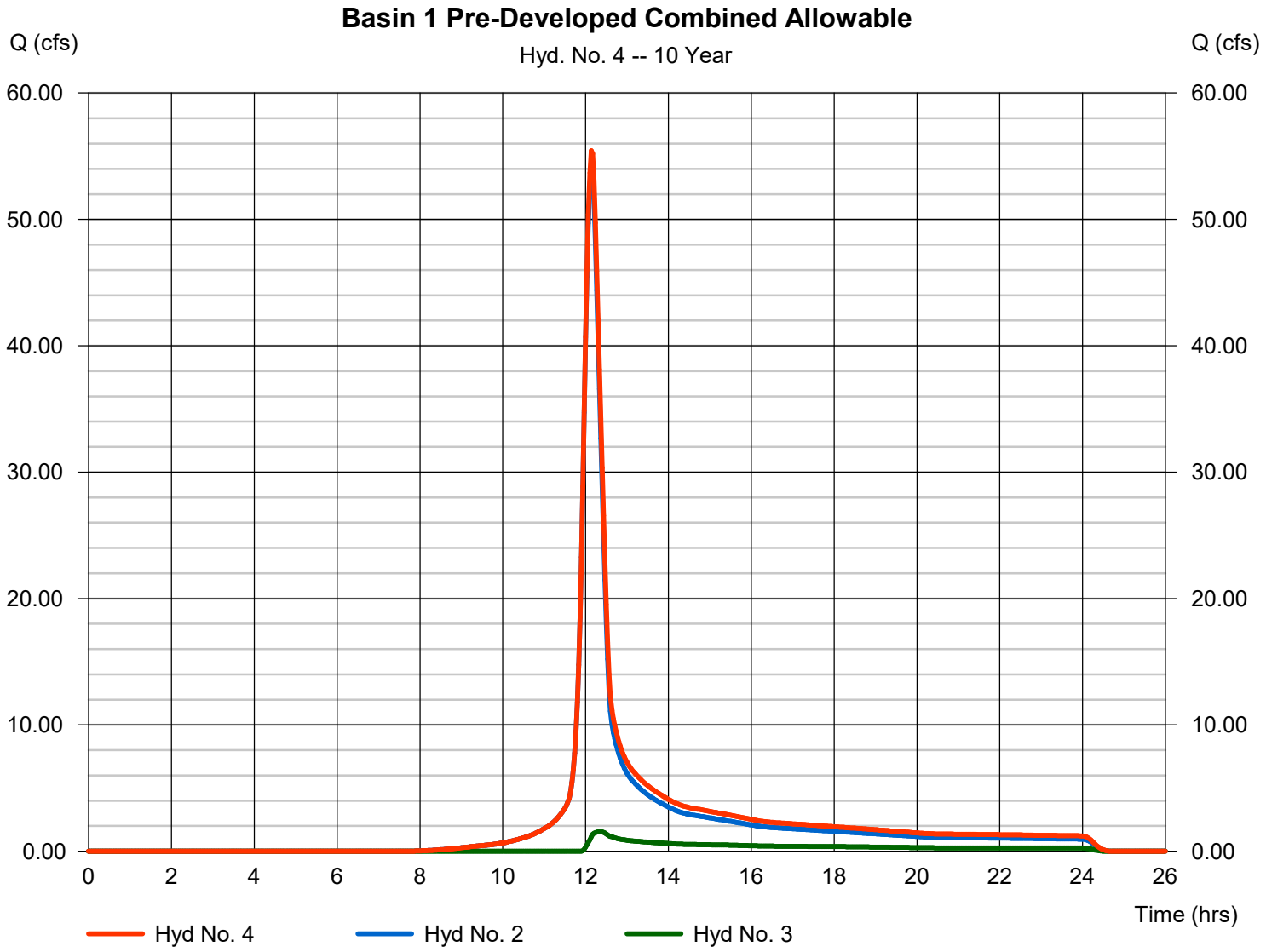
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 4

Basin 1 Pre-Developed Combined Allowable

Hydrograph type	= Combine	Peak discharge	= 55.43 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 219,153 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 24.450 ac

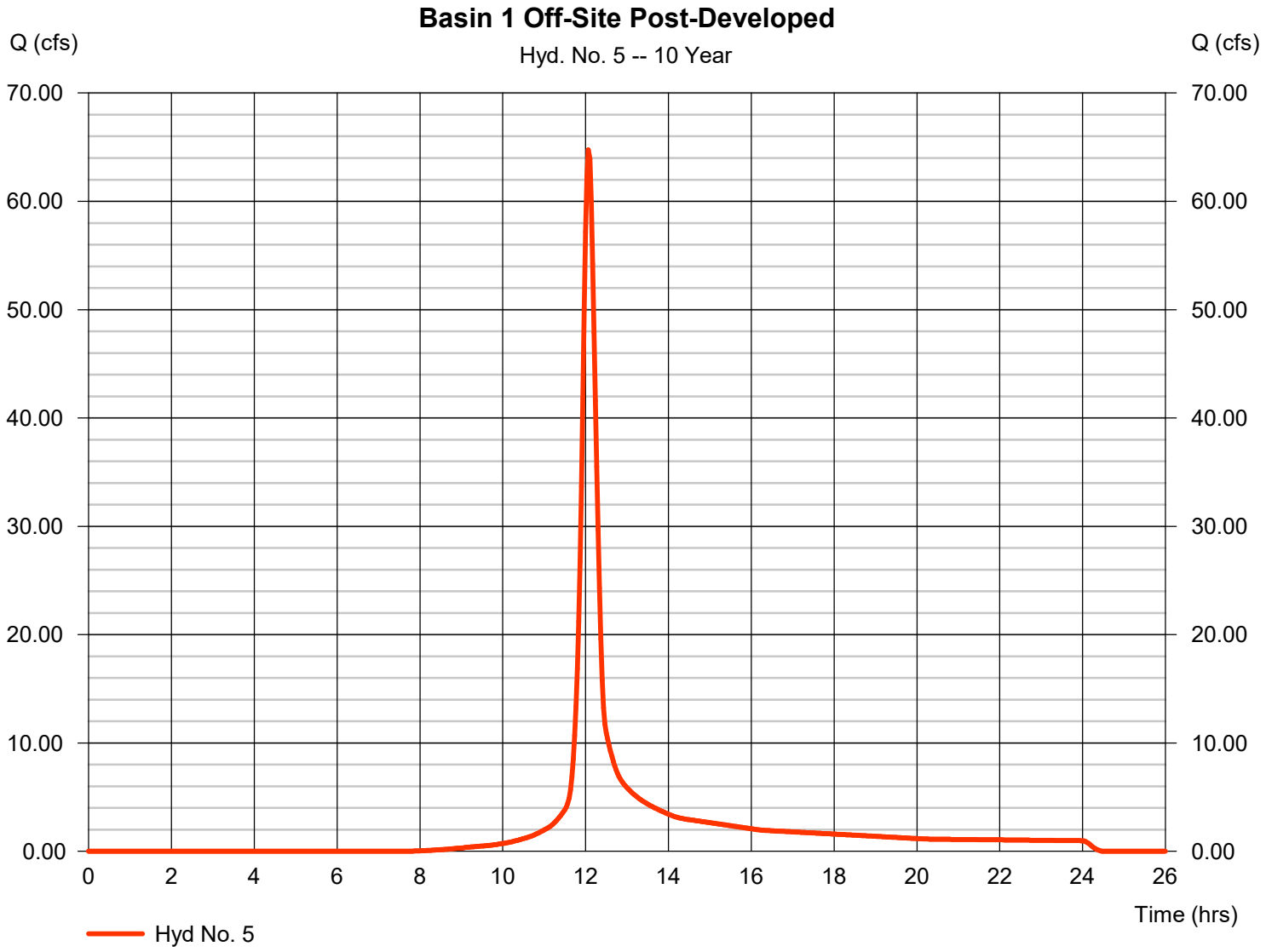


Hydrograph Report

Hyd. No. 5

Basin 1 Off-Site Post-Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 64.76 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 202,482 cuft
Drainage area	= 24.450 ac	Curve number	= 81.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.00 min
Total precip.	= 4.15 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



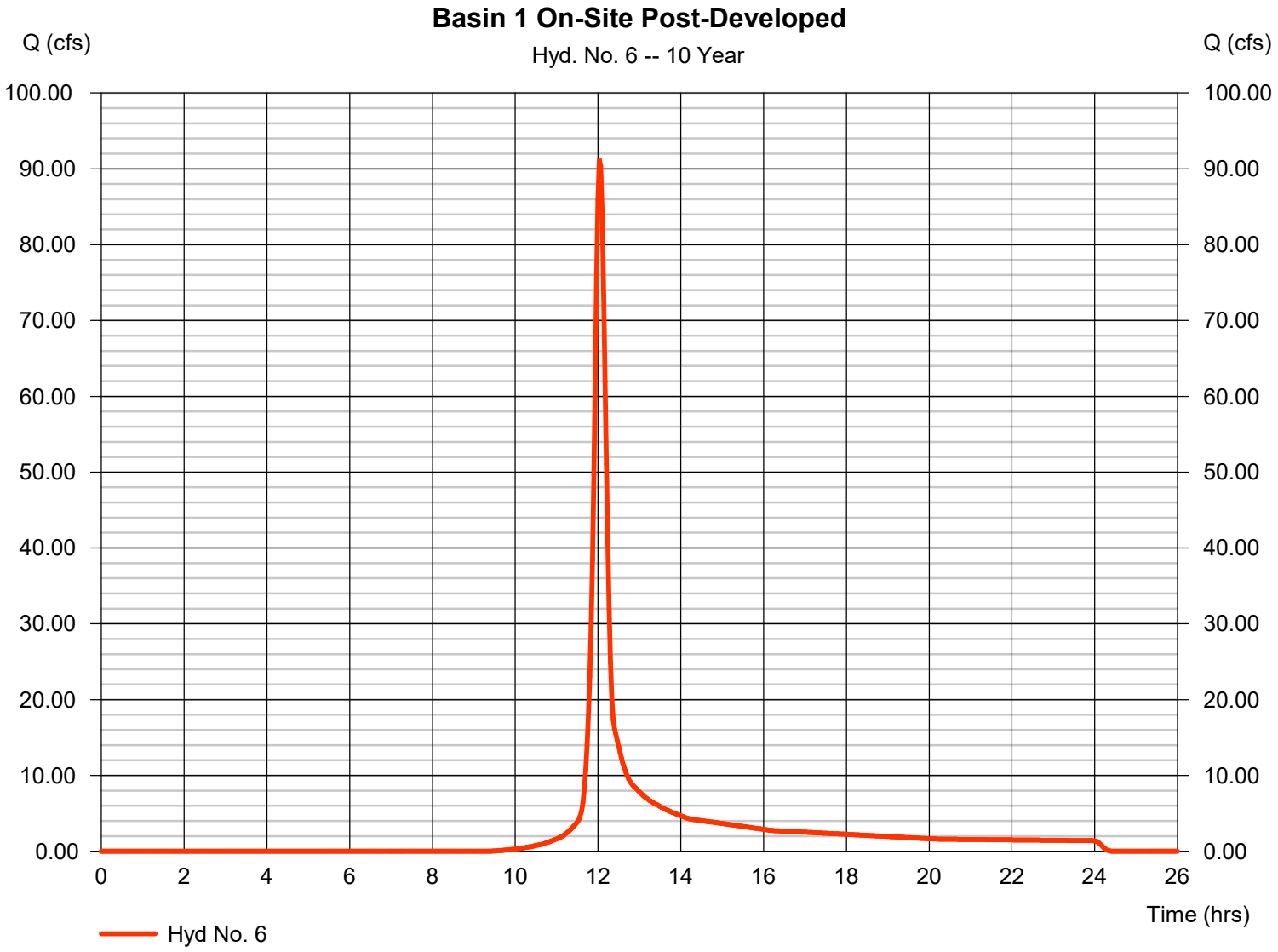
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 6

Basin 1 On-Site Post-Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 91.19 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 257,705 cuft
Drainage area	= 39.750 ac	Curve number	= 75.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 4.15 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

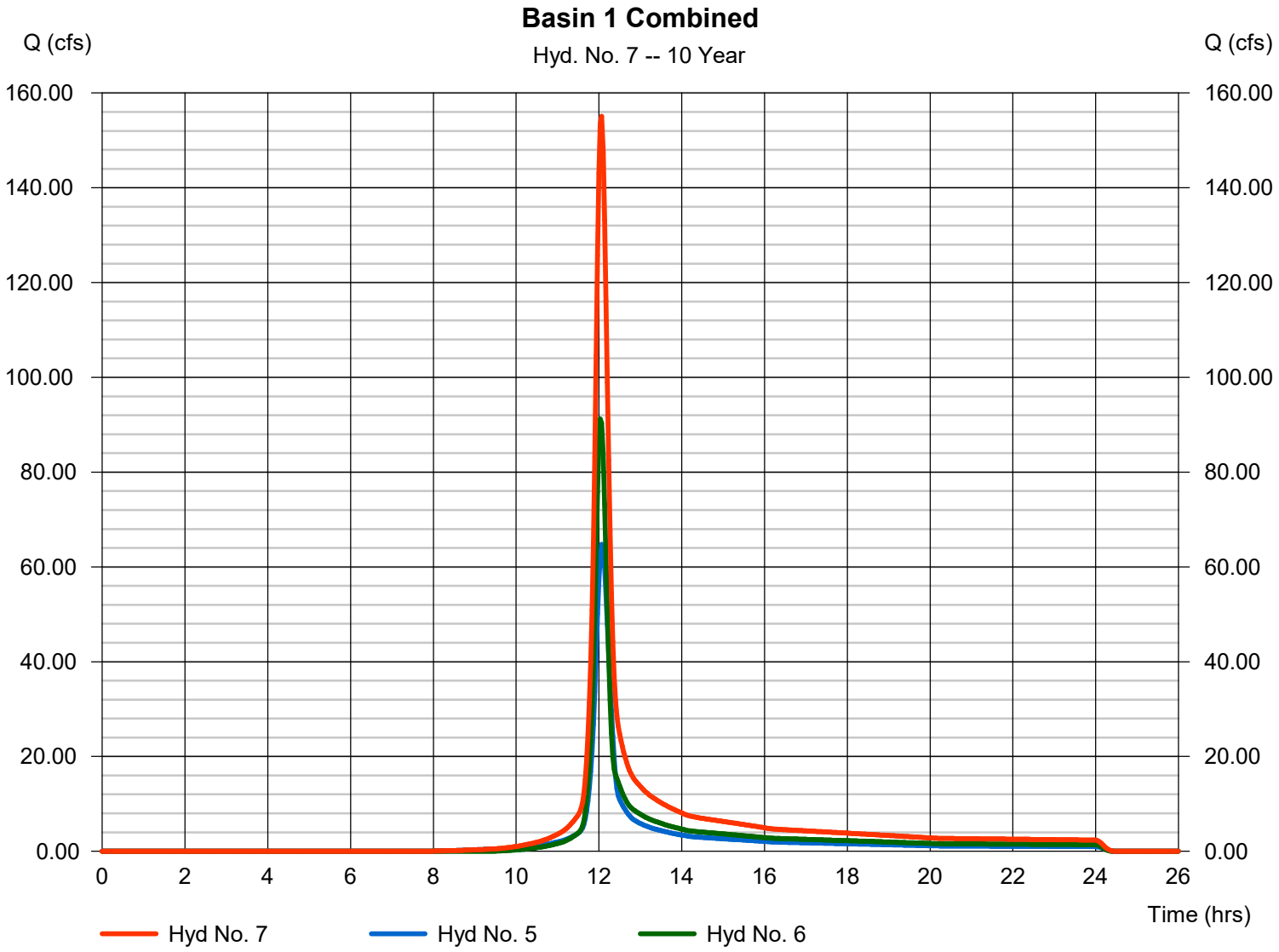


Hydrograph Report

Hyd. No. 7

Basin 1 Combined

Hydrograph type	= Combine	Peak discharge	= 155.10 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 460,188 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 64.200 ac



Hydrograph Report

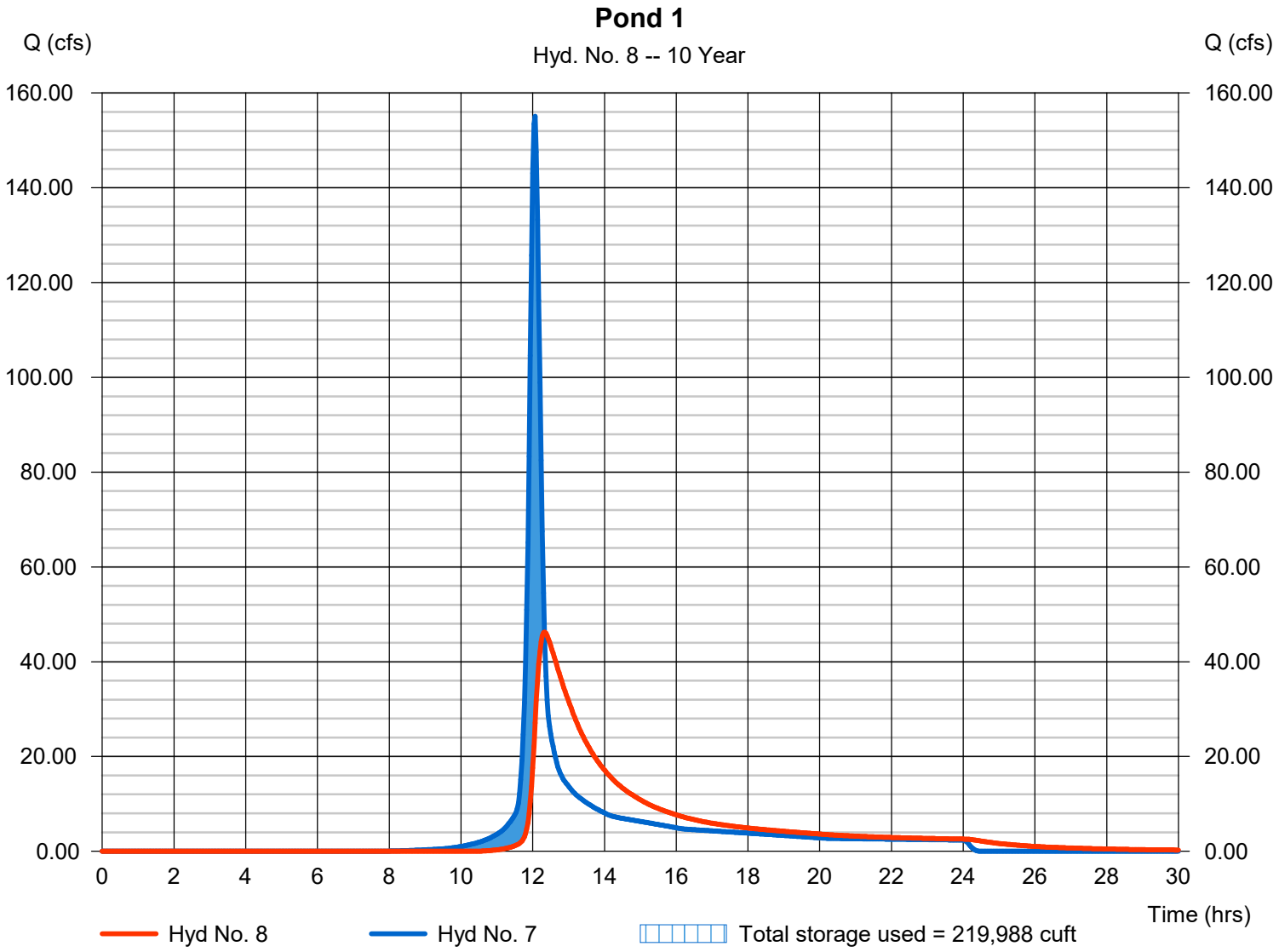
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 8

Pond 1

Hydrograph type	= Reservoir	Peak discharge	= 46.24 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 455,033 cuft
Inflow hyd. No.	= 7 - Basin 1 Combined	Max. Elevation	= 634.68 ft
Reservoir name	= Pond 1	Max. Storage	= 219,988 cuft

Storage Indication method used. Wet pond routing start elevation = 631.80 ft.



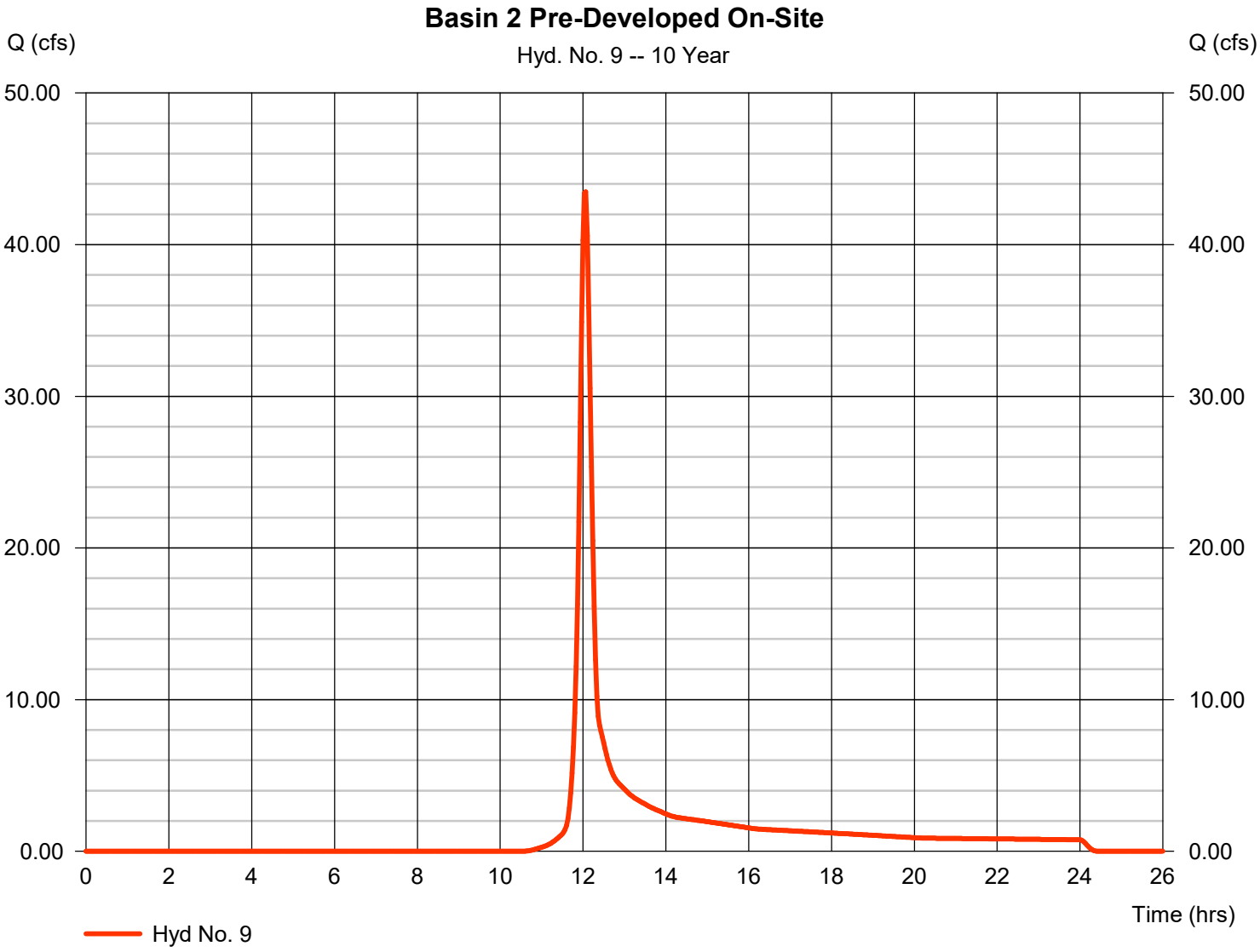
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 9

Basin 2 Pre-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	43.48 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	125,966 cuft
Drainage area	=	24.310 ac	Curve number	=	70.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	14.40 min
Total precip.	=	4.15 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



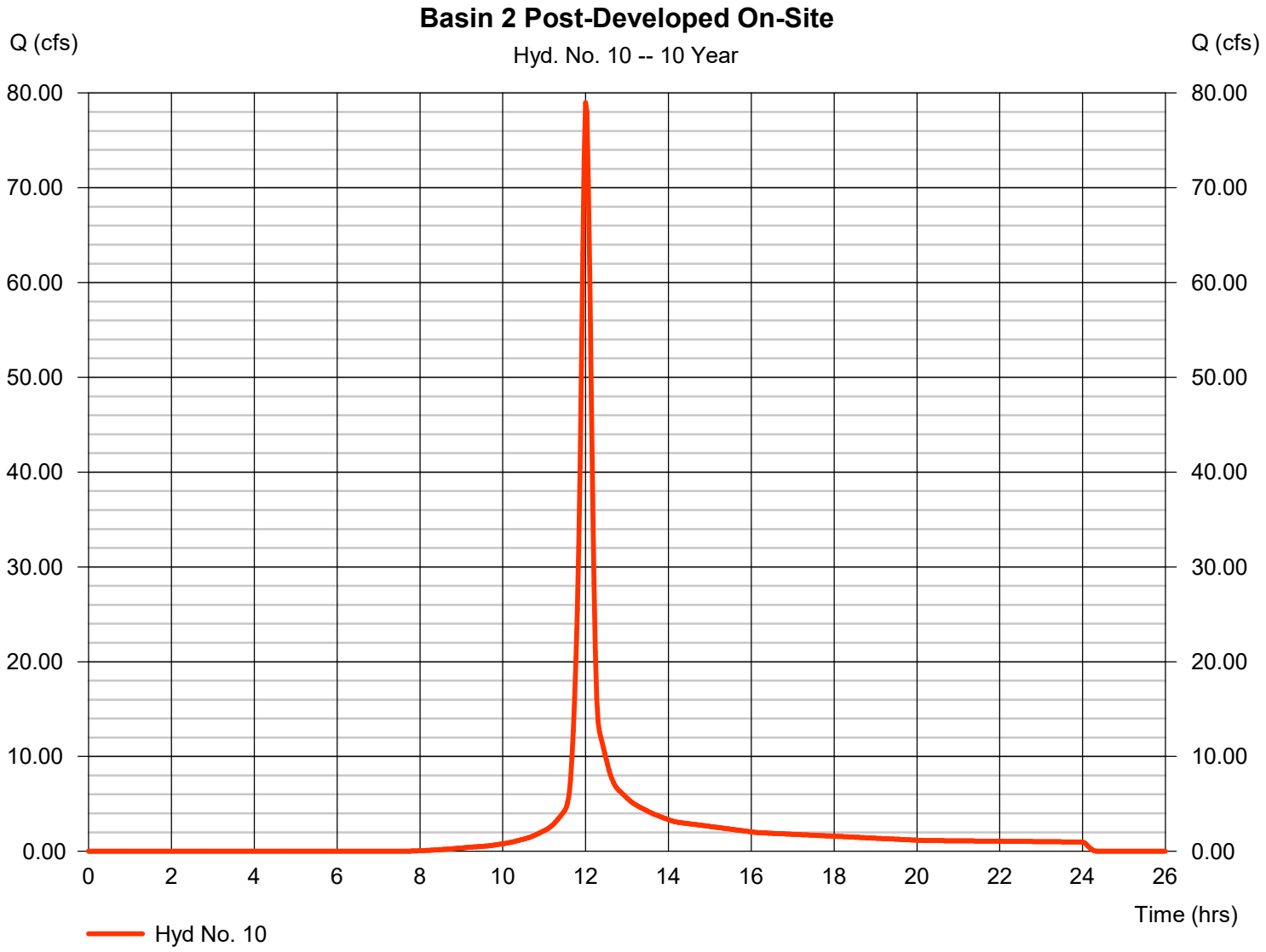
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 10

Basin 2 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 78.97 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 204,774 cuft
Drainage area	= 23.890 ac	Curve number	= 81.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 4.15 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

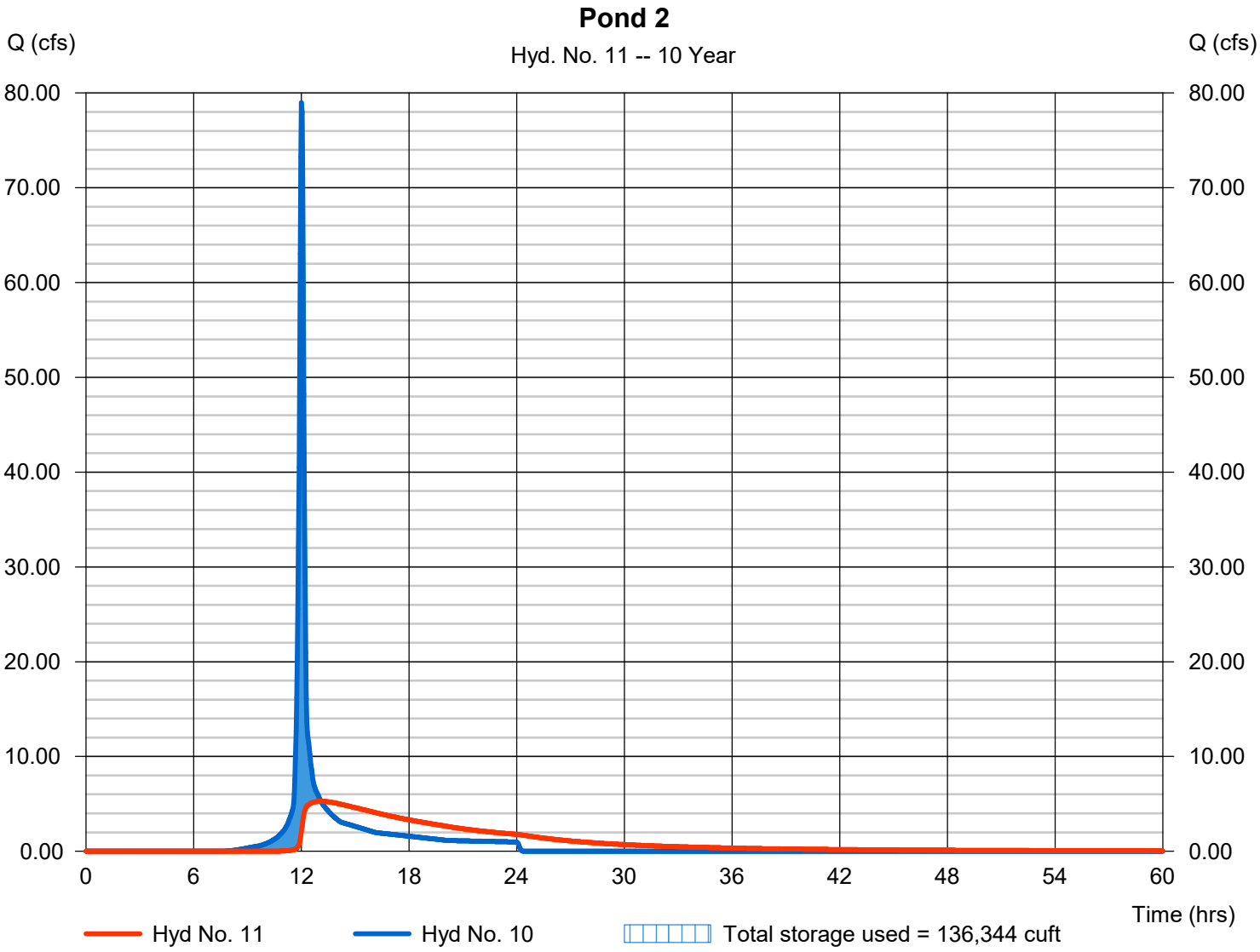
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 11

Pond 2

Hydrograph type	=	Reservoir	Peak discharge	=	5.269 cfs
Storm frequency	=	10 yrs	Time to peak	=	13.10 hrs
Time interval	=	2 min	Hyd. volume	=	199,323 cuft
Inflow hyd. No.	=	10 - Basin 2 Post-Developed On-Site	Max. Elevation	=	635.76 ft
Reservoir name	=	Pond 2	Max. Storage	=	136,344 cuft

Storage Indication method used. Wet pond routing start elevation = 633.50 ft.



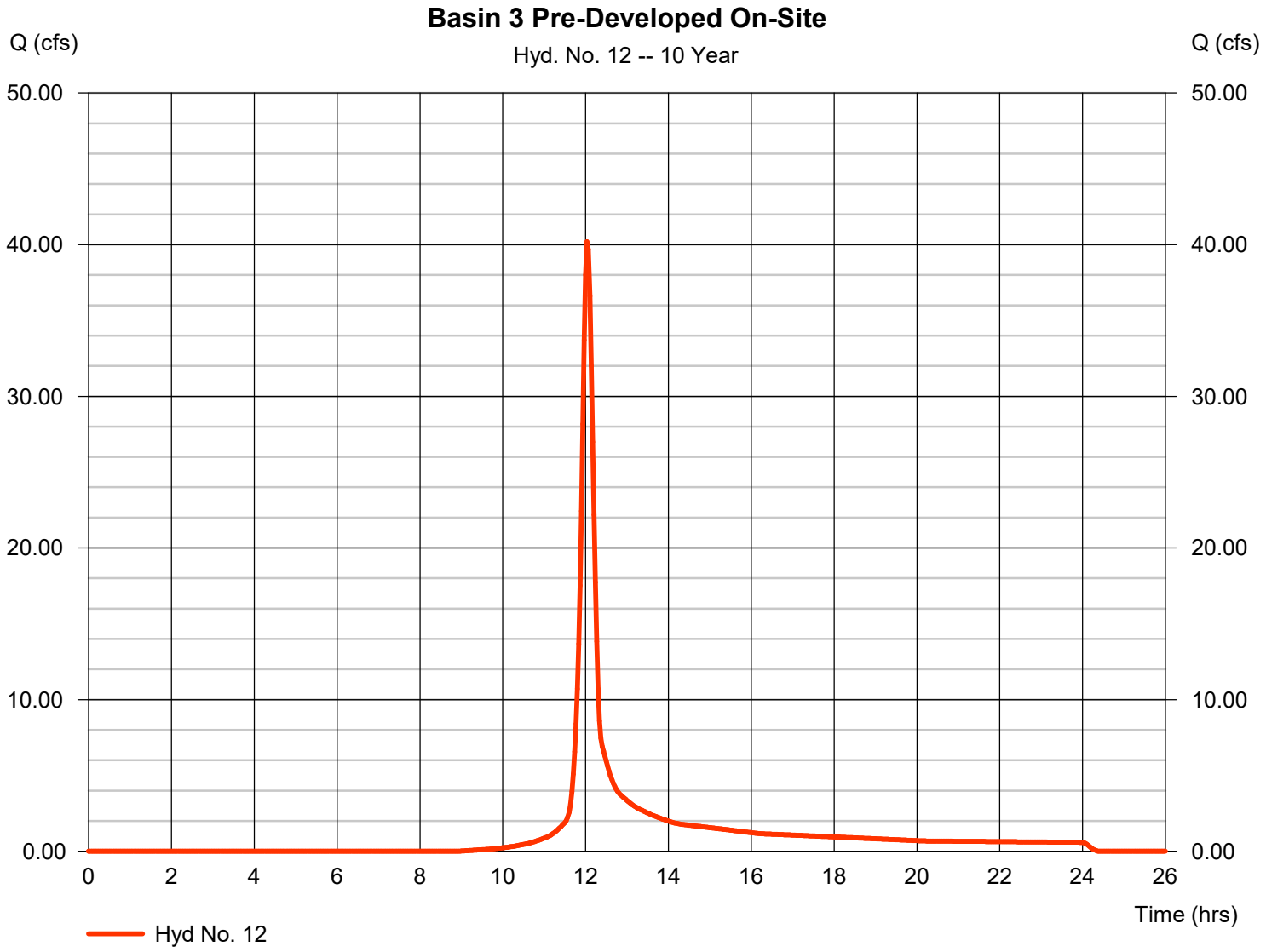
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 12

Basin 3 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 40.19 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 113,020 cuft
Drainage area	= 16.160 ac	Curve number	= 77.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.30 min
Total precip.	= 4.15 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



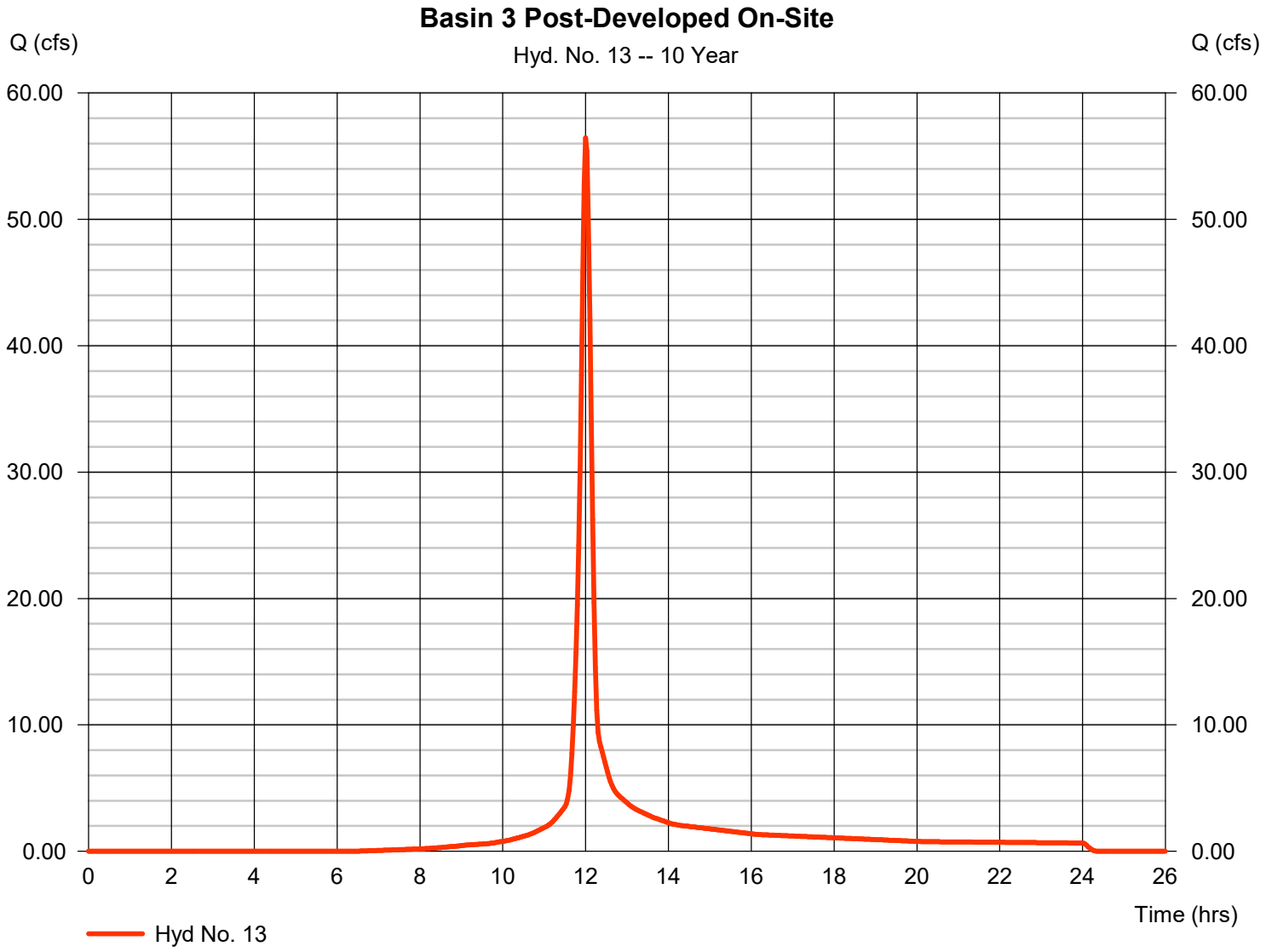
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 13

Basin 3 Post-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	56.45 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	147,210 cuft
Drainage area	=	15.170 ac	Curve number	=	85
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	4.15 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

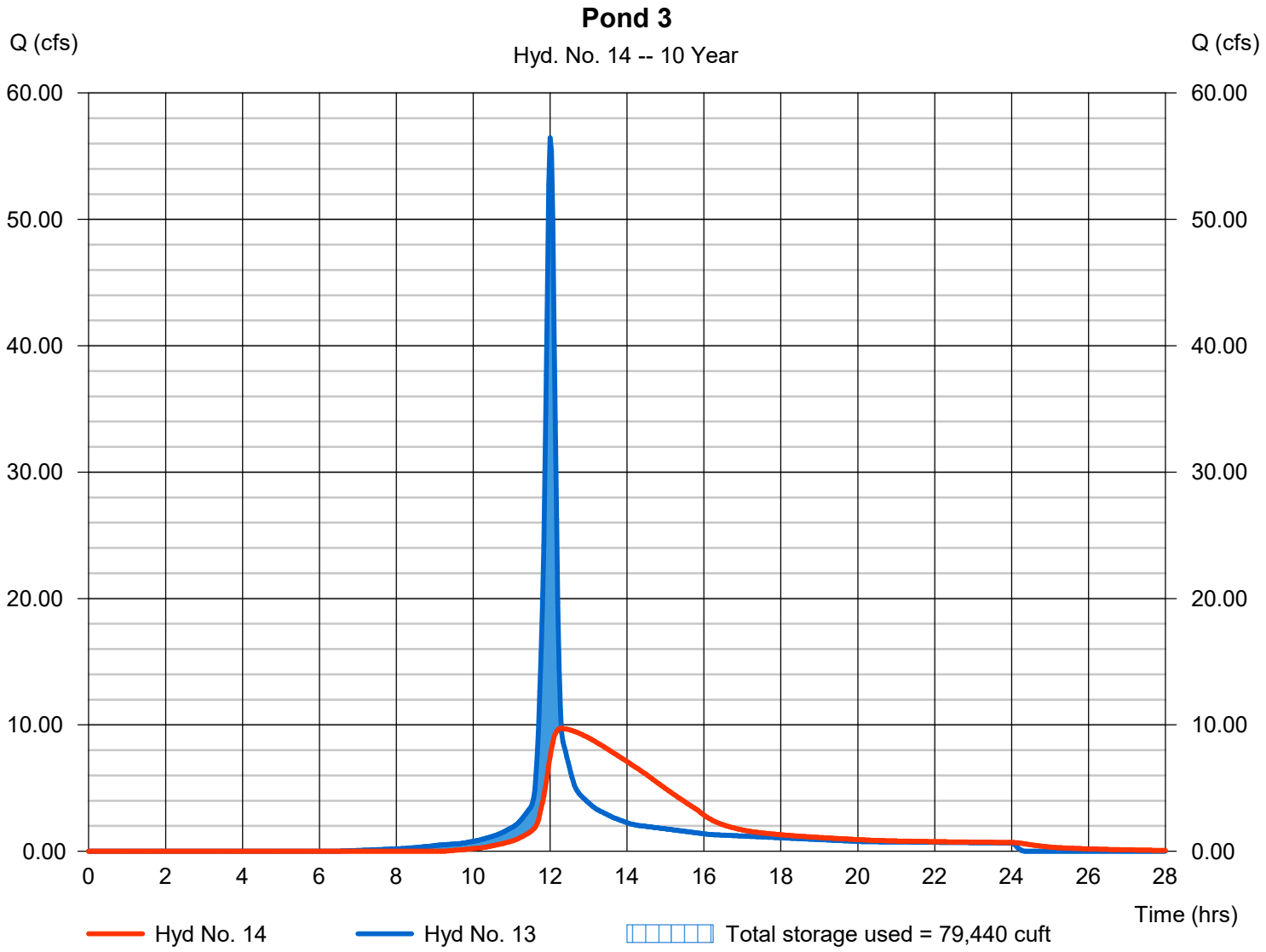
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 14

Pond 3

Hydrograph type	=	Reservoir	Peak discharge	=	9.753 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.30 hrs
Time interval	=	2 min	Hyd. volume	=	145,188 cuft
Inflow hyd. No.	=	13 - Basin 3 Post-Developed On-Site	Max. Elevation	=	657.30 ft
Reservoir name	=	Pond 3	Max. Storage	=	79,440 cuft

Storage Indication method used. Wet pond routing start elevation = 654.80 ft.



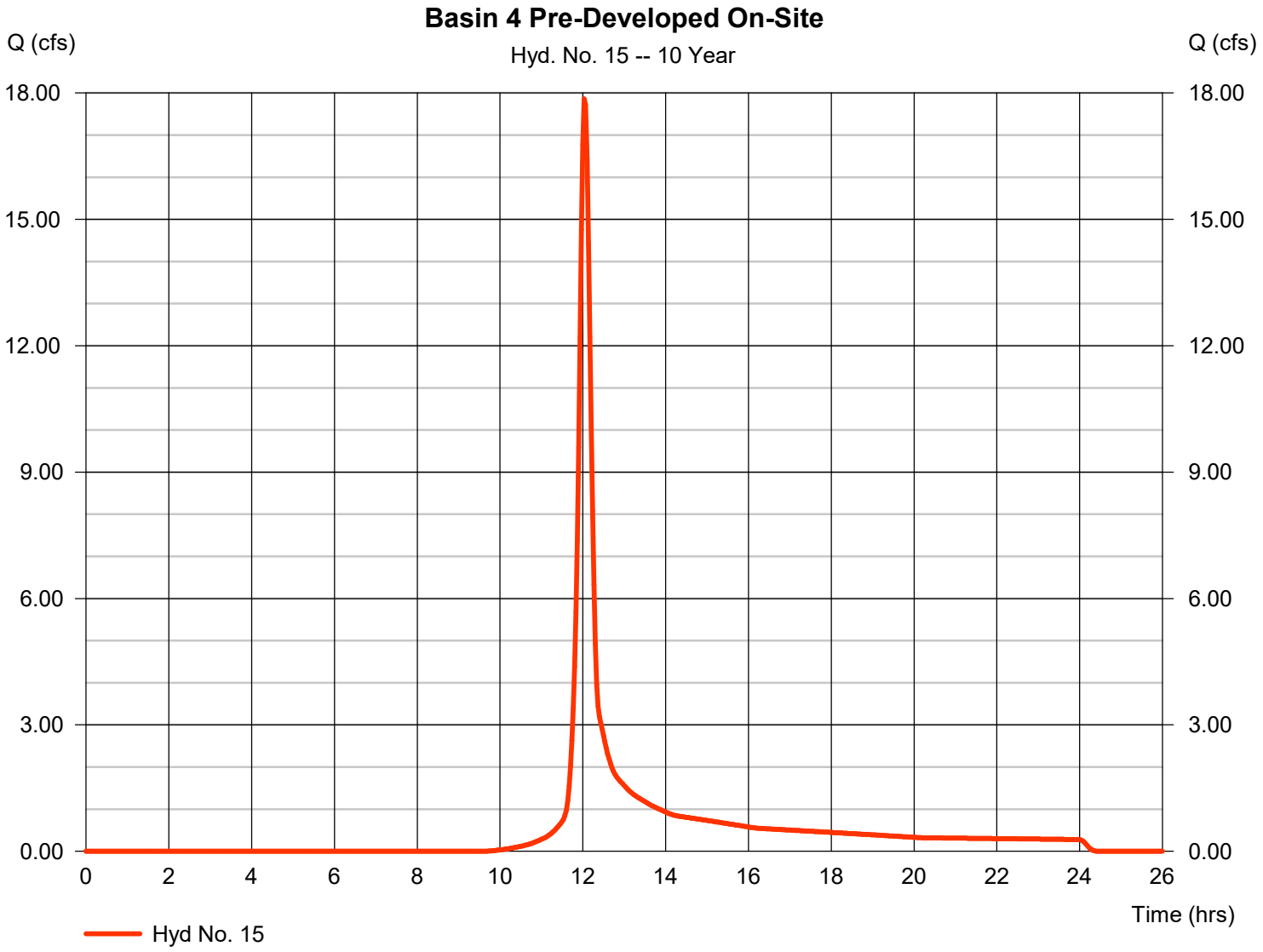
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 15

Basin 4 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 17.86 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 50,648 cuft
Drainage area	= 8.140 ac	Curve number	= 74.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.20 min
Total precip.	= 4.15 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



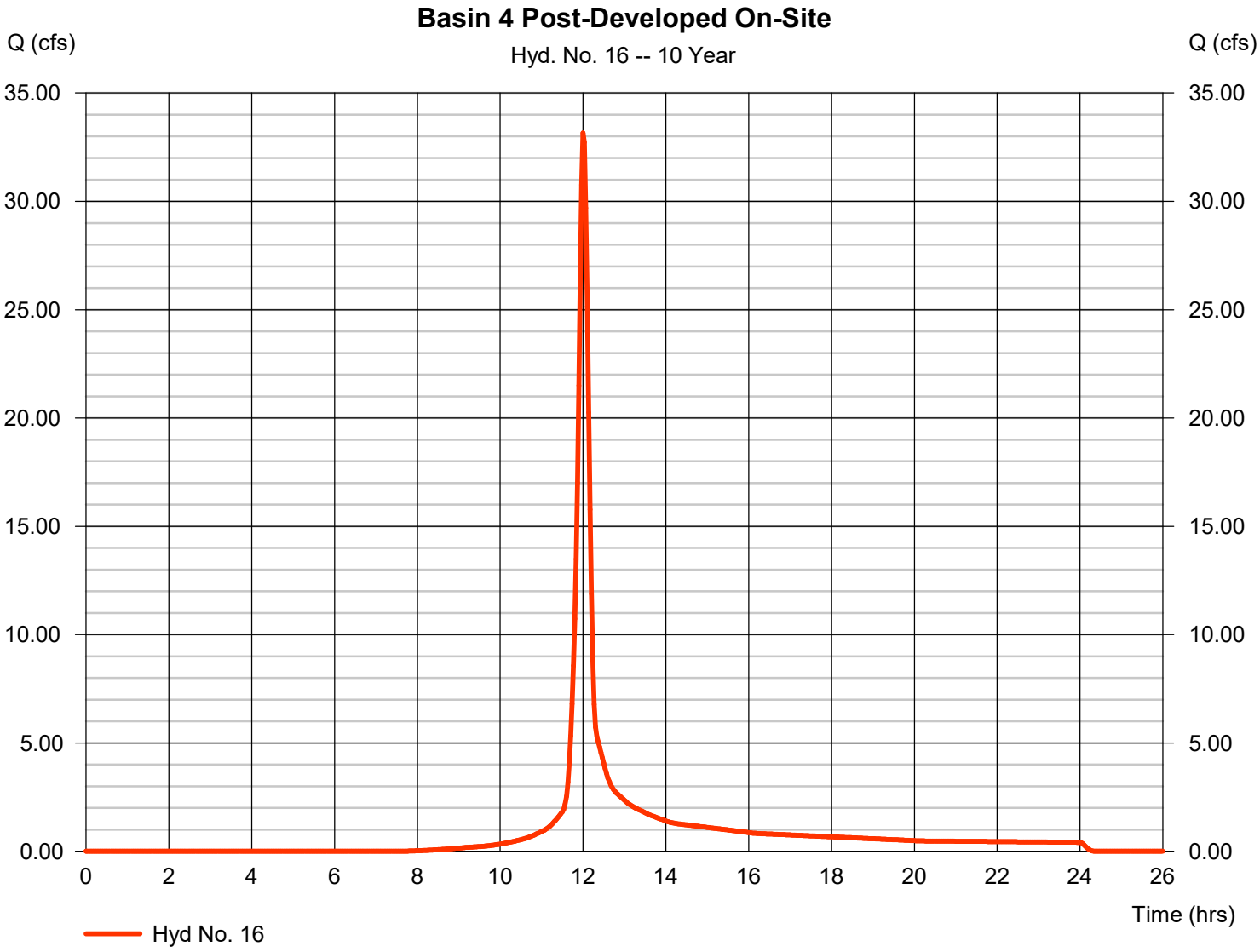
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 16

Basin 4 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 33.16 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 85,972 cuft
Drainage area	= 10.030 ac	Curve number	= 81.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 4.15 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

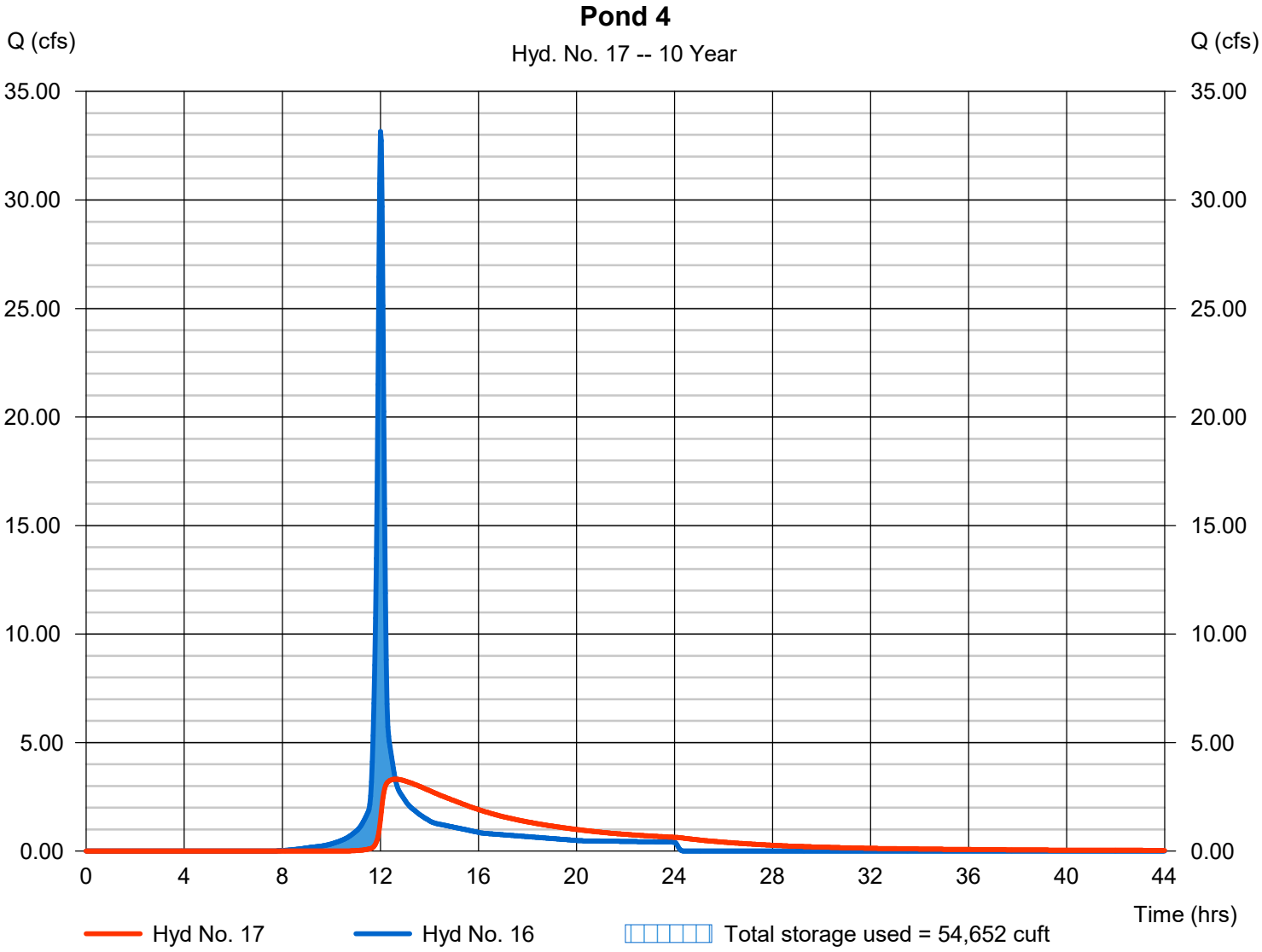
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 17

Pond 4

Hydrograph type	=	Reservoir	Peak discharge	=	3.316 cfs
Storm frequency	=	10 yrs	Time to peak	=	12.60 hrs
Time interval	=	2 min	Hyd. volume	=	83,834 cuft
Inflow hyd. No.	=	16 - Basin 4 Post-Developed On-Site	Max. Elevation	=	705.38 ft
Reservoir name	=	Pond 4	Max. Storage	=	54,652 cuft

Storage Indication method used. Wet pond routing start elevation = 703.50 ft.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	52.75	2	728	200,128	------	------	------	Basin 1 Pre-Developed On-Site
2	SCS Runoff	68.81	2	728	252,476	------	------	------	Basin 1 Off-Site Pre-Developed
3	Manual	1.550	2	740	19,835	------	------	------	Basin 1 Pre-Developed Allowable
4	Combine	69.96	2	728	272,311	2, 3	------	------	Basin 1 Pre-Developed Combined All
5	SCS Runoff	81.98	2	724	256,484	------	------	------	Basin 1 Off-Site Post-Developed
6	SCS Runoff	119.60	2	722	335,823	------	------	------	Basin 1 On-Site Post-Developed
7	Combine	199.86	2	724	592,307	5, 6	------	------	Basin 1 Combined
8	Reservoir	65.28	2	738	587,151	7	635.36	269,927	Pond 1
9	SCS Runoff	59.33	2	722	169,036	------	------	------	Basin 2 Pre-Developed On-Site
10	SCS Runoff	99.72	2	720	259,264	------	------	------	Basin 2 Post-Developed On-Site
11	Reservoir	7.337	2	774	253,773	10	636.29	166,705	Pond 2
12	SCS Runoff	52.03	2	722	145,843	------	------	------	Basin 3 Pre-Developed On-Site
13	SCS Runoff	69.88	2	720	183,407	------	------	------	Basin 3 Post-Developed On-Site
14	Reservoir	22.93	2	732	181,385	13	657.68	90,794	Pond 3
15	SCS Runoff	23.59	2	722	66,353	------	------	------	Basin 4 Pre-Developed On-Site
16	SCS Runoff	41.86	2	720	108,850	------	------	------	Basin 4 Post-Developed On-Site
17	Reservoir	10.12	2	734	106,712	16	705.68	62,659	Pond 4

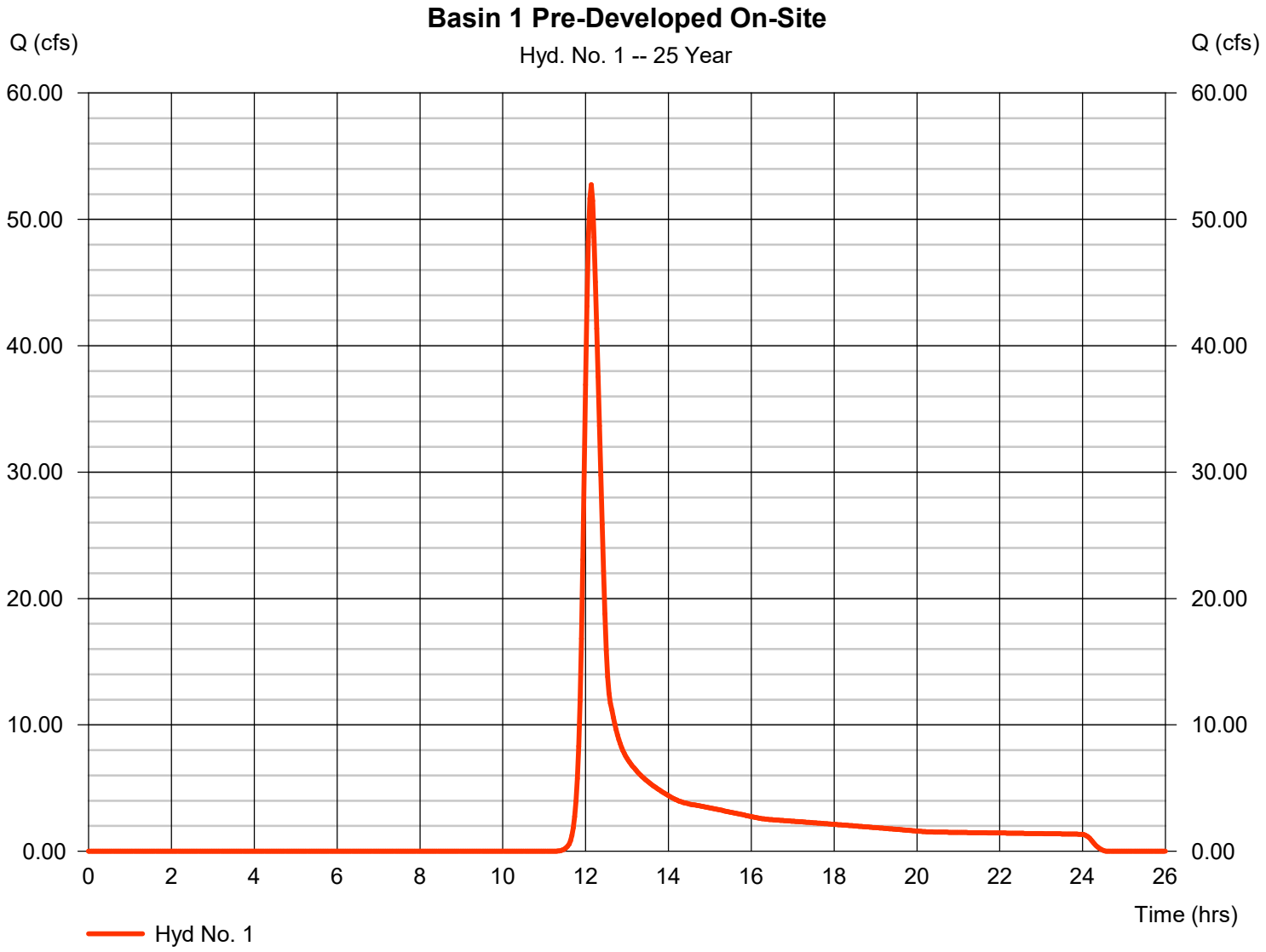
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 1

Basin 1 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 52.75 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 200,128 cuft
Drainage area	= 40.220 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.40 min
Total precip.	= 4.85 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



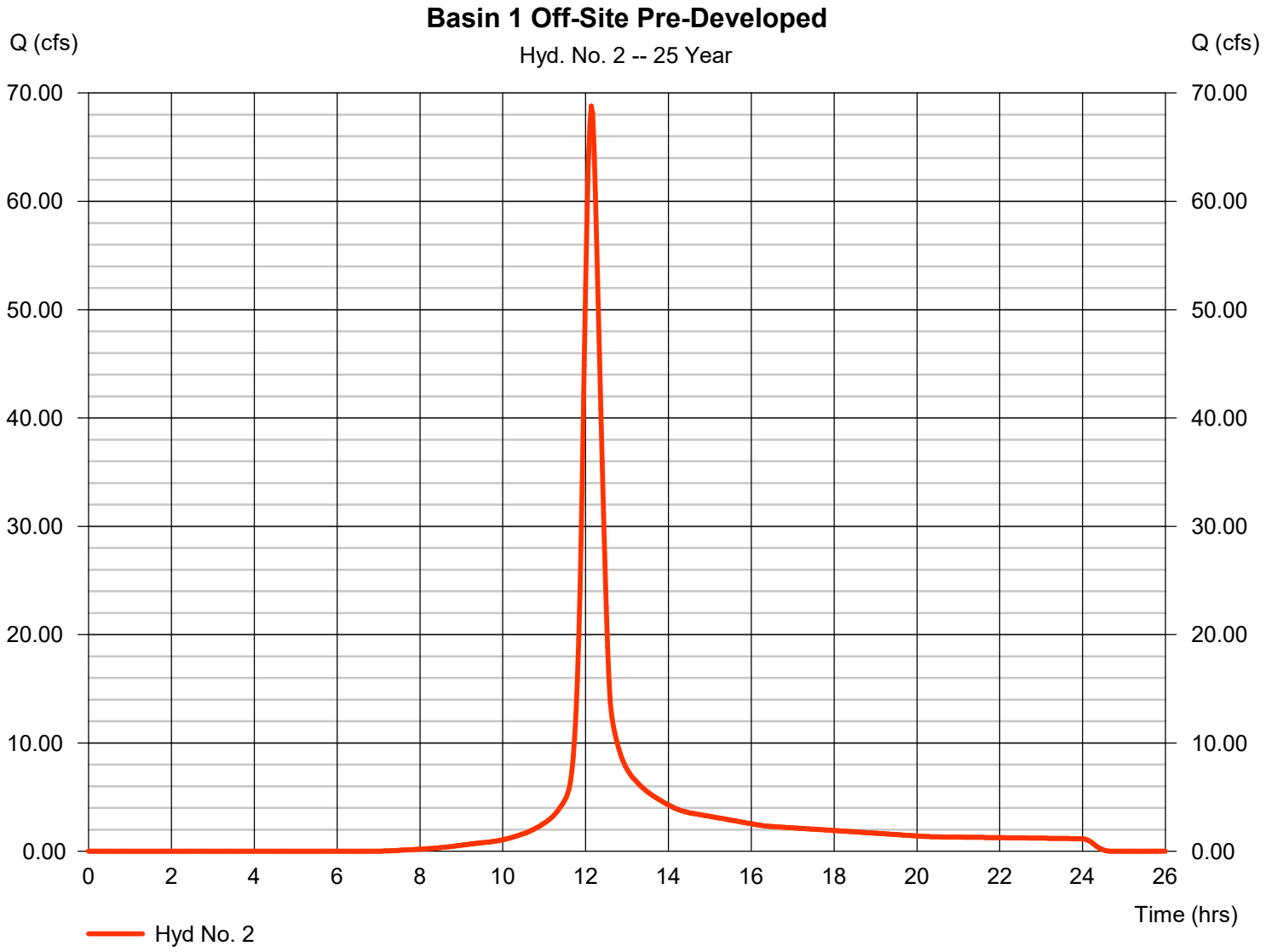
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 2

Basin 1 Off-Site Pre-Developed

Hydrograph type	=	SCS Runoff	Peak discharge	=	68.81 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.13 hrs
Time interval	=	2 min	Hyd. volume	=	252,476 cuft
Drainage area	=	24.450 ac	Curve number	=	81.4
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	23.50 min
Total precip.	=	4.85 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



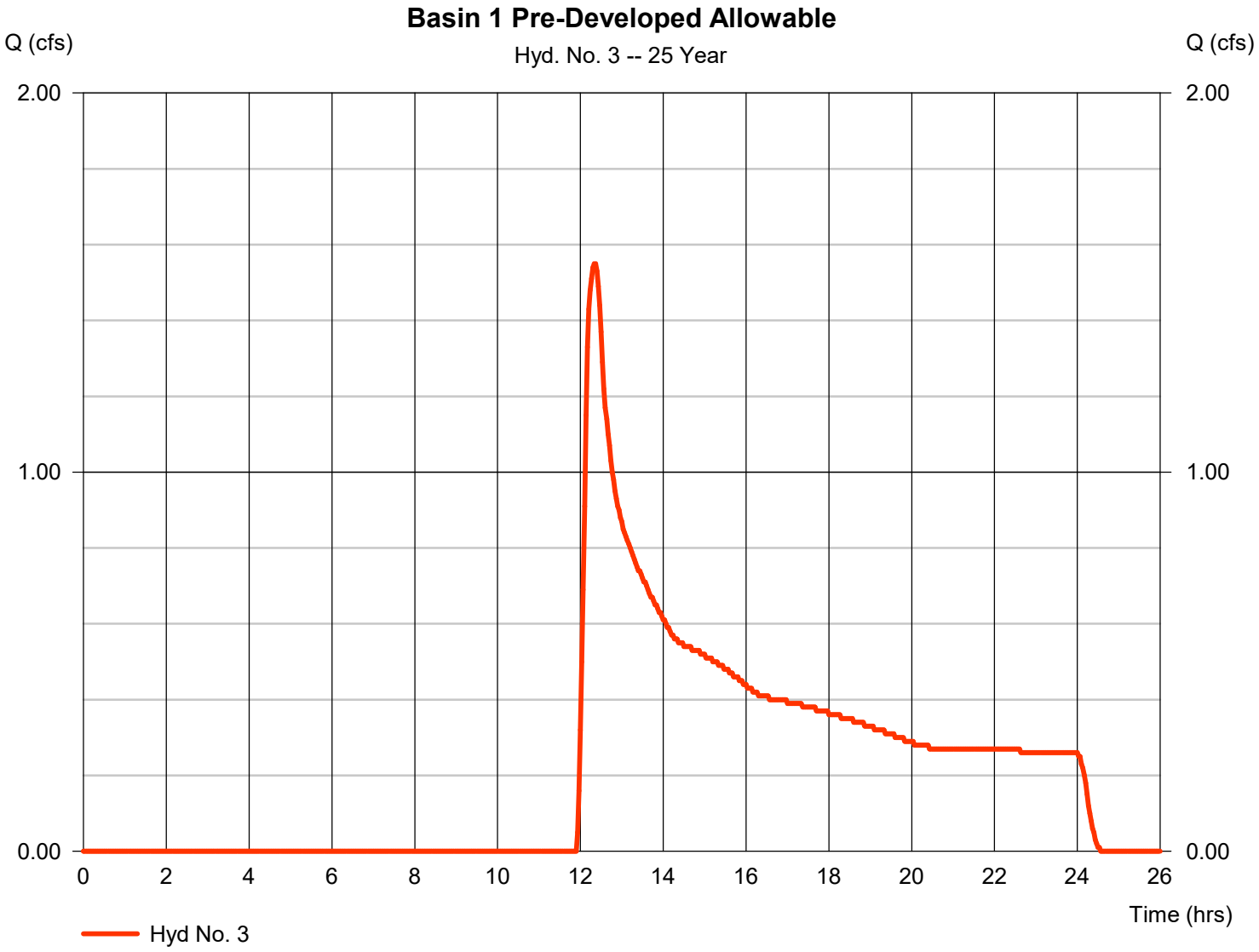
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 3

Basin 1 Pre-Developed Allowable

Hydrograph type	= Manual	Peak discharge	= 1.550 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.33 hrs
Time interval	= 2 min	Hyd. volume	= 19,835 cuft

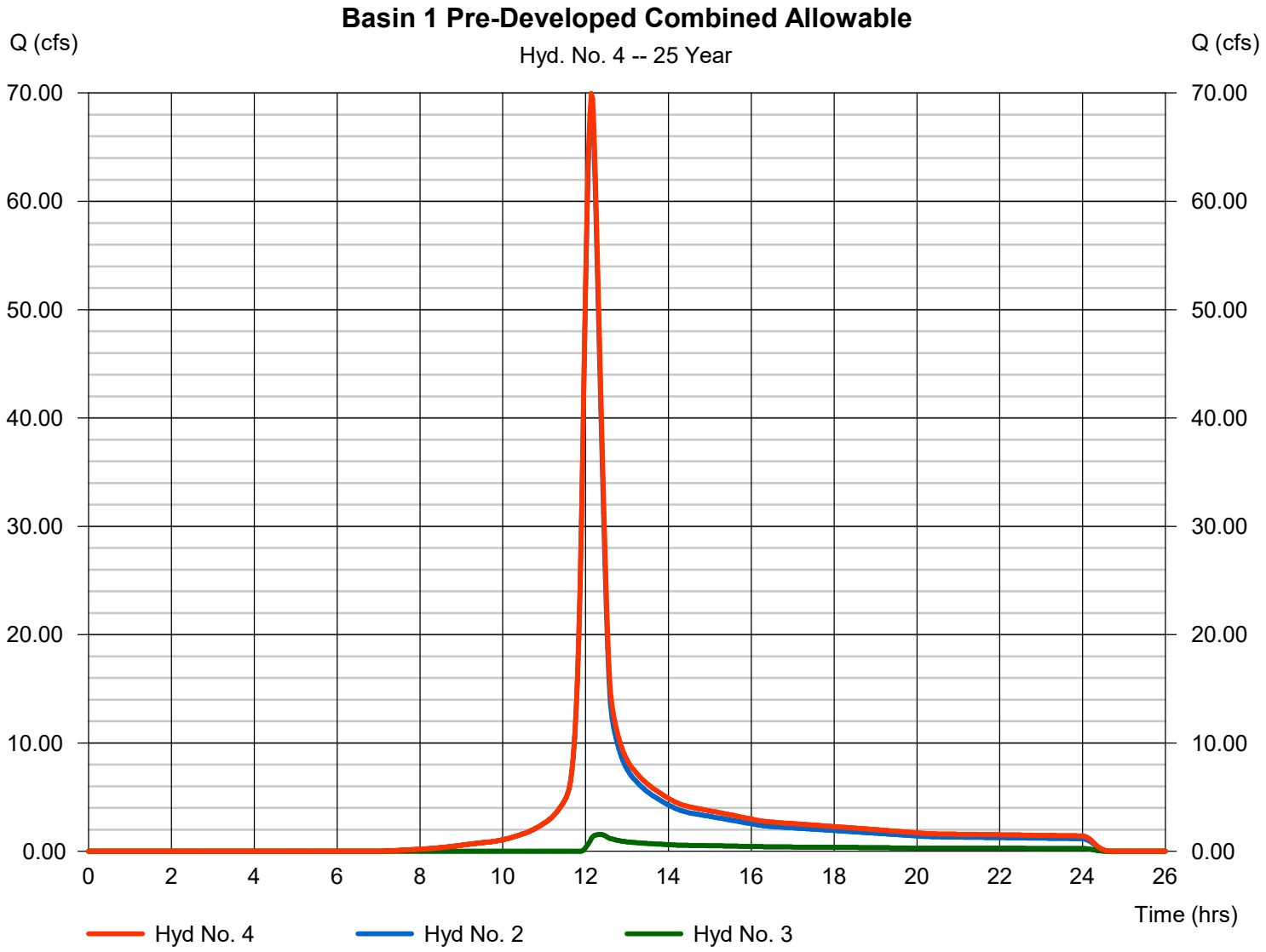


Hydrograph Report

Hyd. No. 4

Basin 1 Pre-Developed Combined Allowable

Hydrograph type	= Combine	Peak discharge	= 69.96 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 272,311 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 24.450 ac



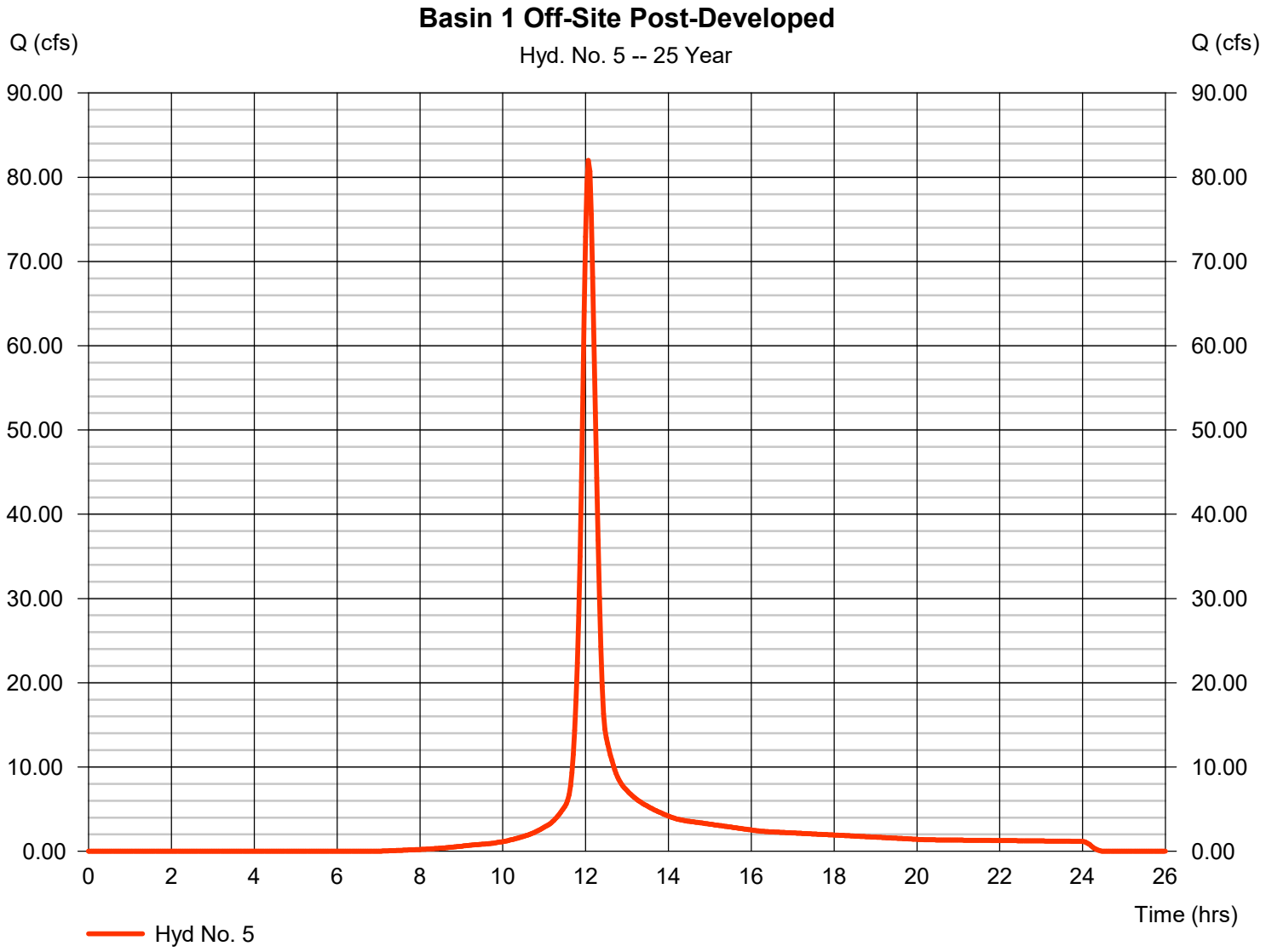
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 5

Basin 1 Off-Site Post-Developed

Hydrograph type	=	SCS Runoff	Peak discharge	=	81.98 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	256,484 cuft
Drainage area	=	24.450 ac	Curve number	=	81.4
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	20.00 min
Total precip.	=	4.85 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



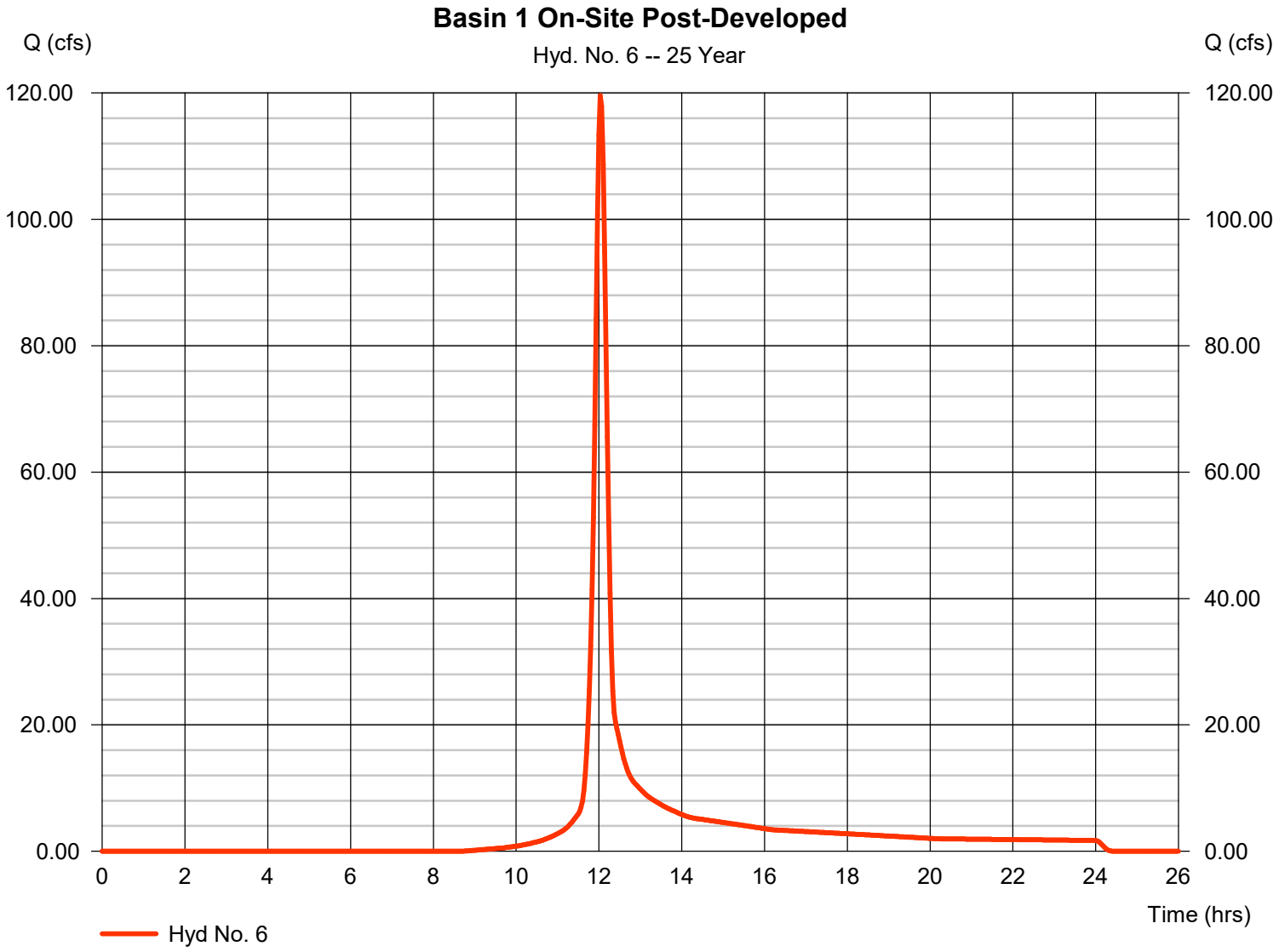
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 6

Basin 1 On-Site Post-Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 119.60 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 335,823 cuft
Drainage area	= 39.750 ac	Curve number	= 75.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.50 min
Total precip.	= 4.85 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



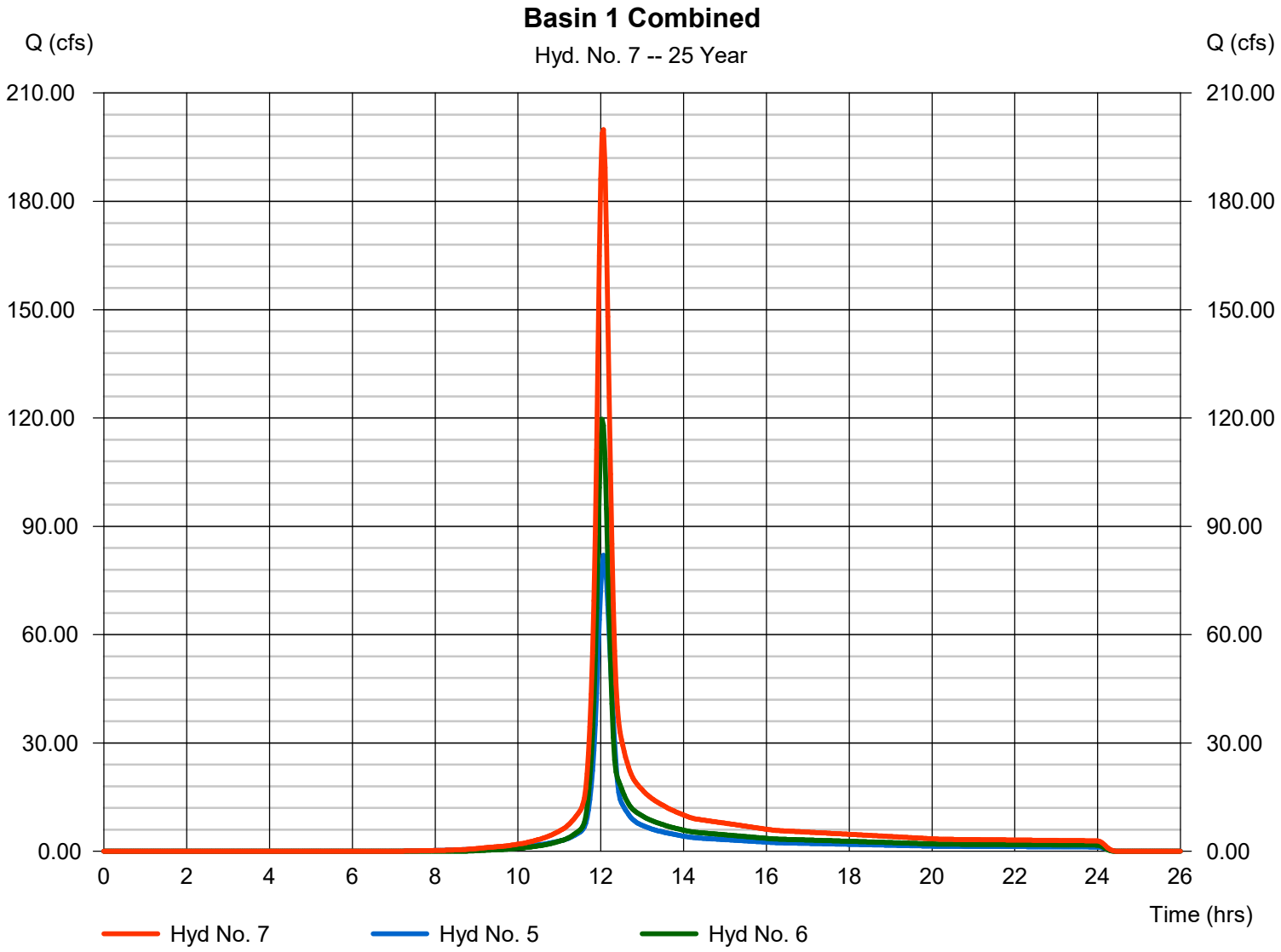
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 7

Basin 1 Combined

Hydrograph type	= Combine	Peak discharge	= 199.86 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 592,307 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 64.200 ac



Hydrograph Report

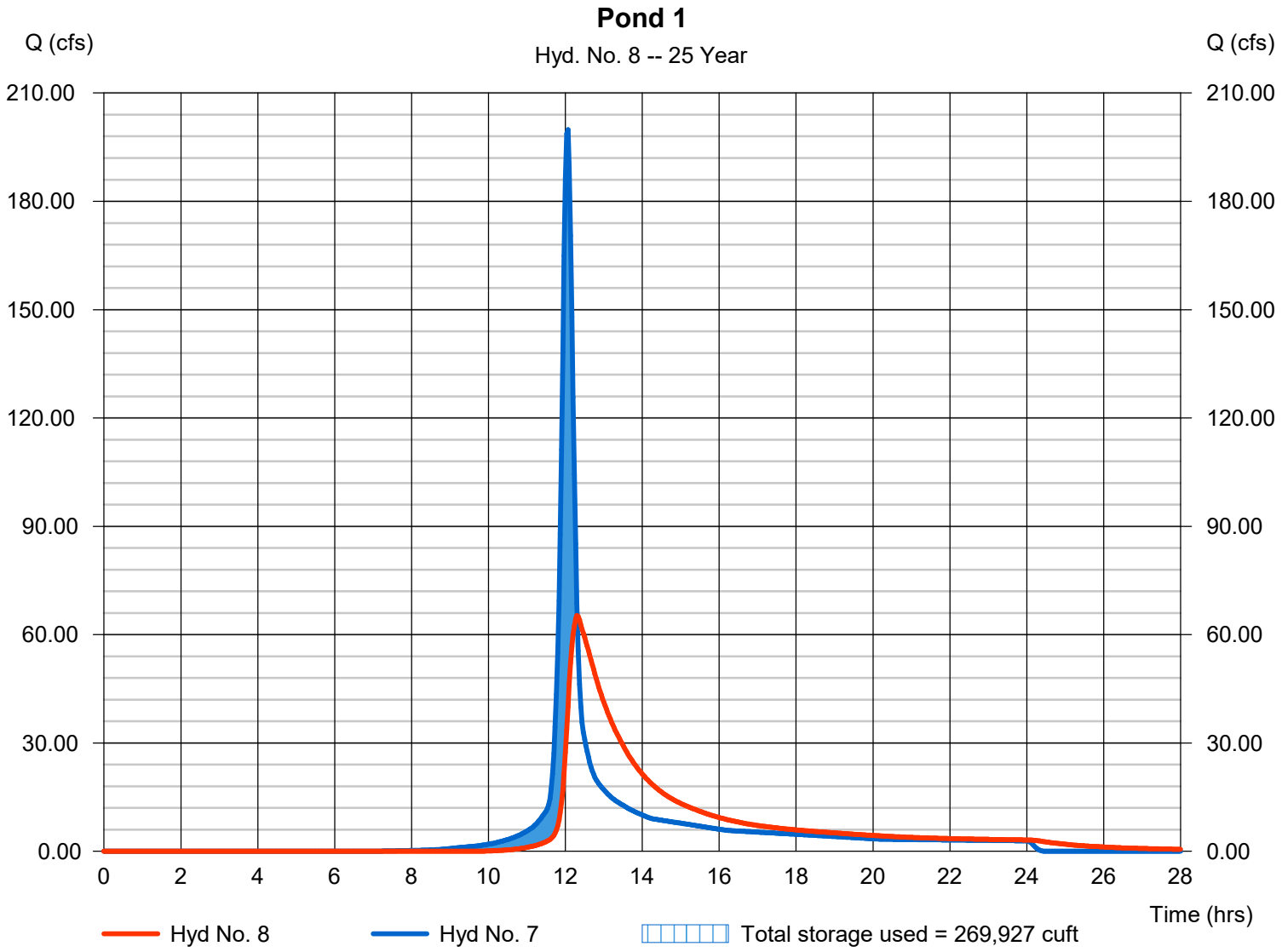
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 8

Pond 1

Hydrograph type	= Reservoir	Peak discharge	= 65.28 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 587,151 cuft
Inflow hyd. No.	= 7 - Basin 1 Combined	Max. Elevation	= 635.36 ft
Reservoir name	= Pond 1	Max. Storage	= 269,927 cuft

Storage Indication method used. Wet pond routing start elevation = 631.80 ft.



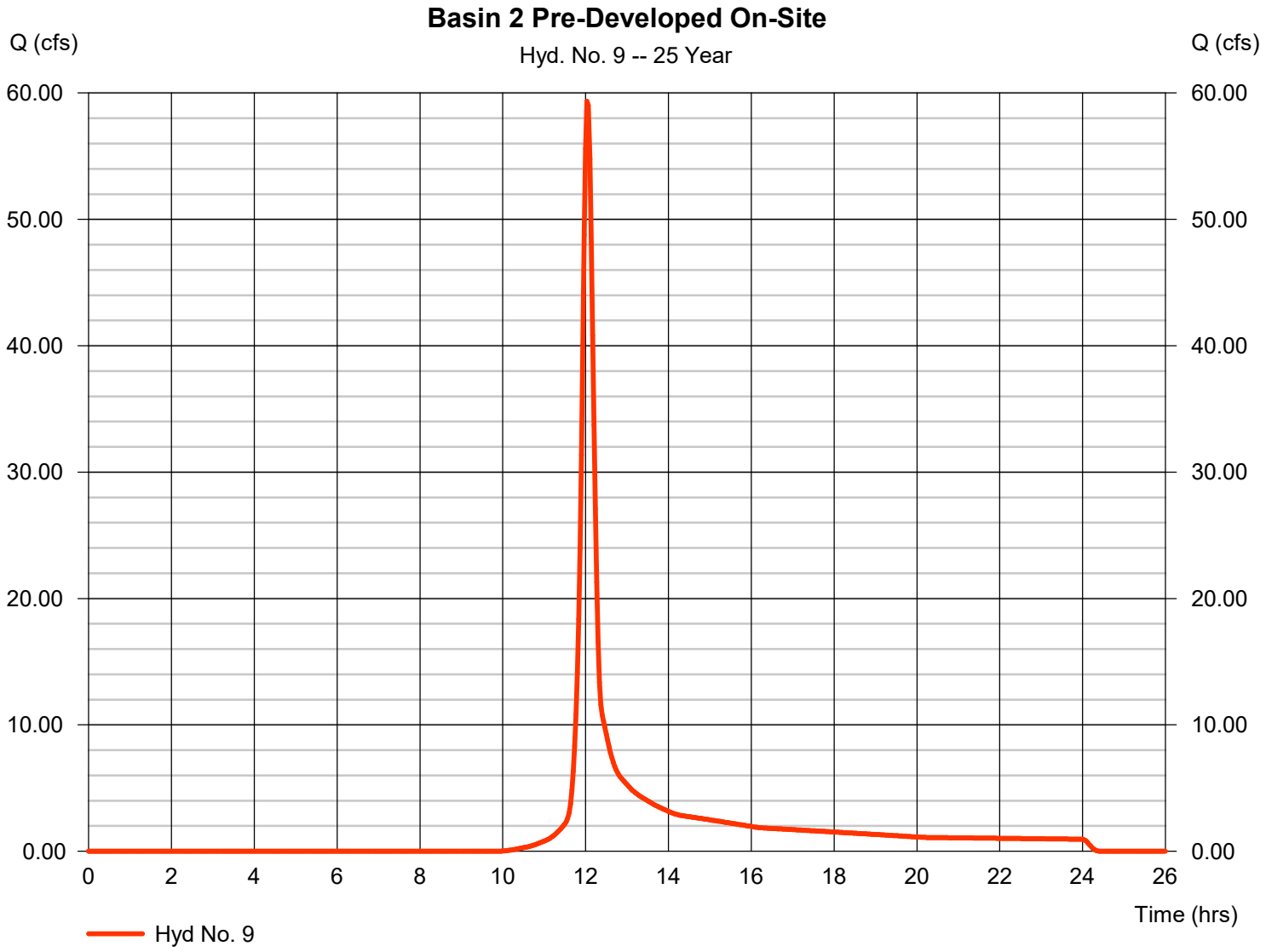
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 9

Basin 2 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 59.33 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 169,036 cuft
Drainage area	= 24.310 ac	Curve number	= 70.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.40 min
Total precip.	= 4.85 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



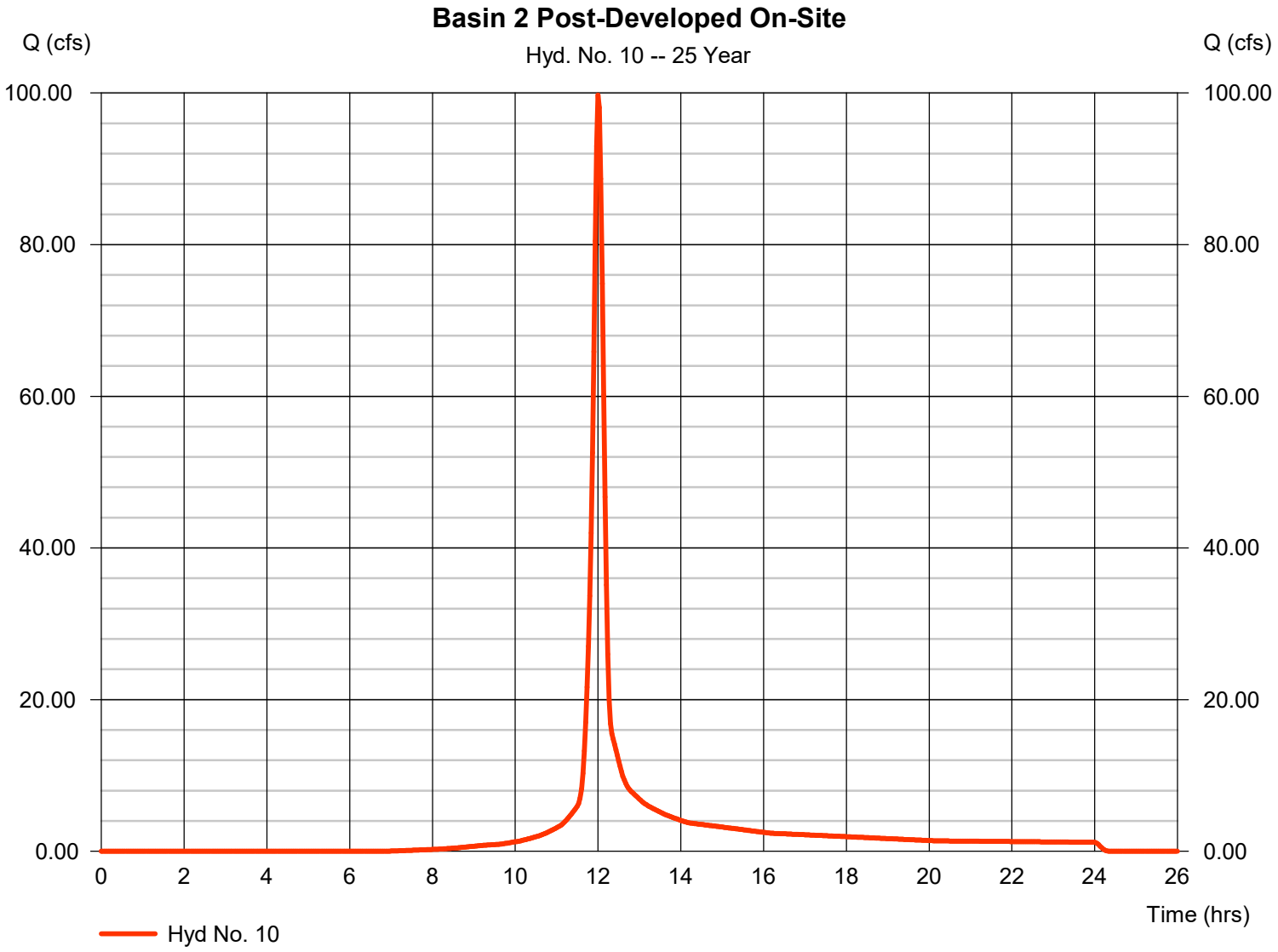
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 10

Basin 2 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 99.72 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 259,264 cuft
Drainage area	= 23.890 ac	Curve number	= 81.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 4.85 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

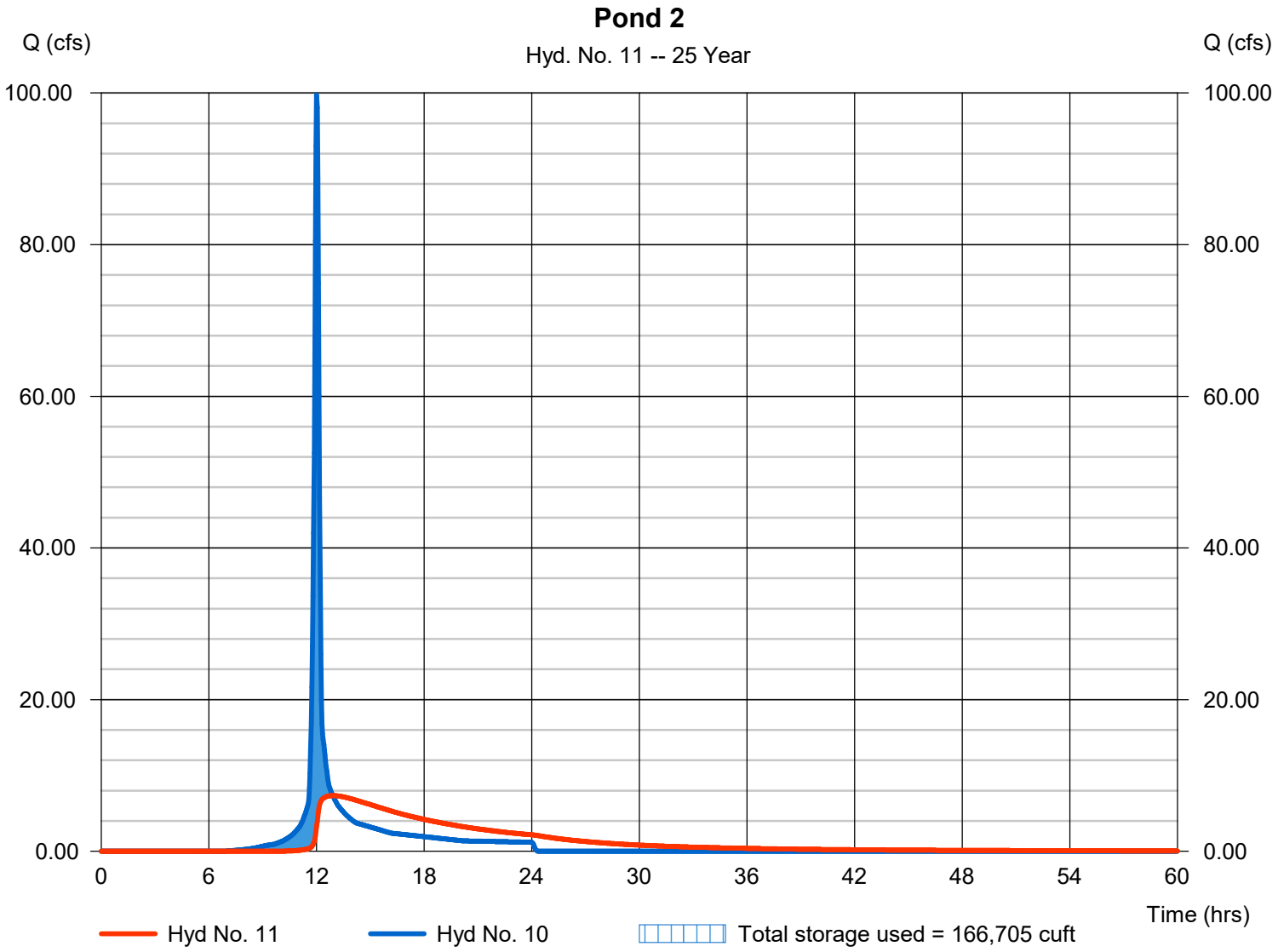
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 11

Pond 2

Hydrograph type	=	Reservoir	Peak discharge	=	7.337 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.90 hrs
Time interval	=	2 min	Hyd. volume	=	253,773 cuft
Inflow hyd. No.	=	10 - Basin 2 Post-Developed On-Site	Max. Elevation	=	636.29 ft
Reservoir name	=	Pond 2	Max. Storage	=	166,705 cuft

Storage Indication method used. Wet pond routing start elevation = 633.50 ft.



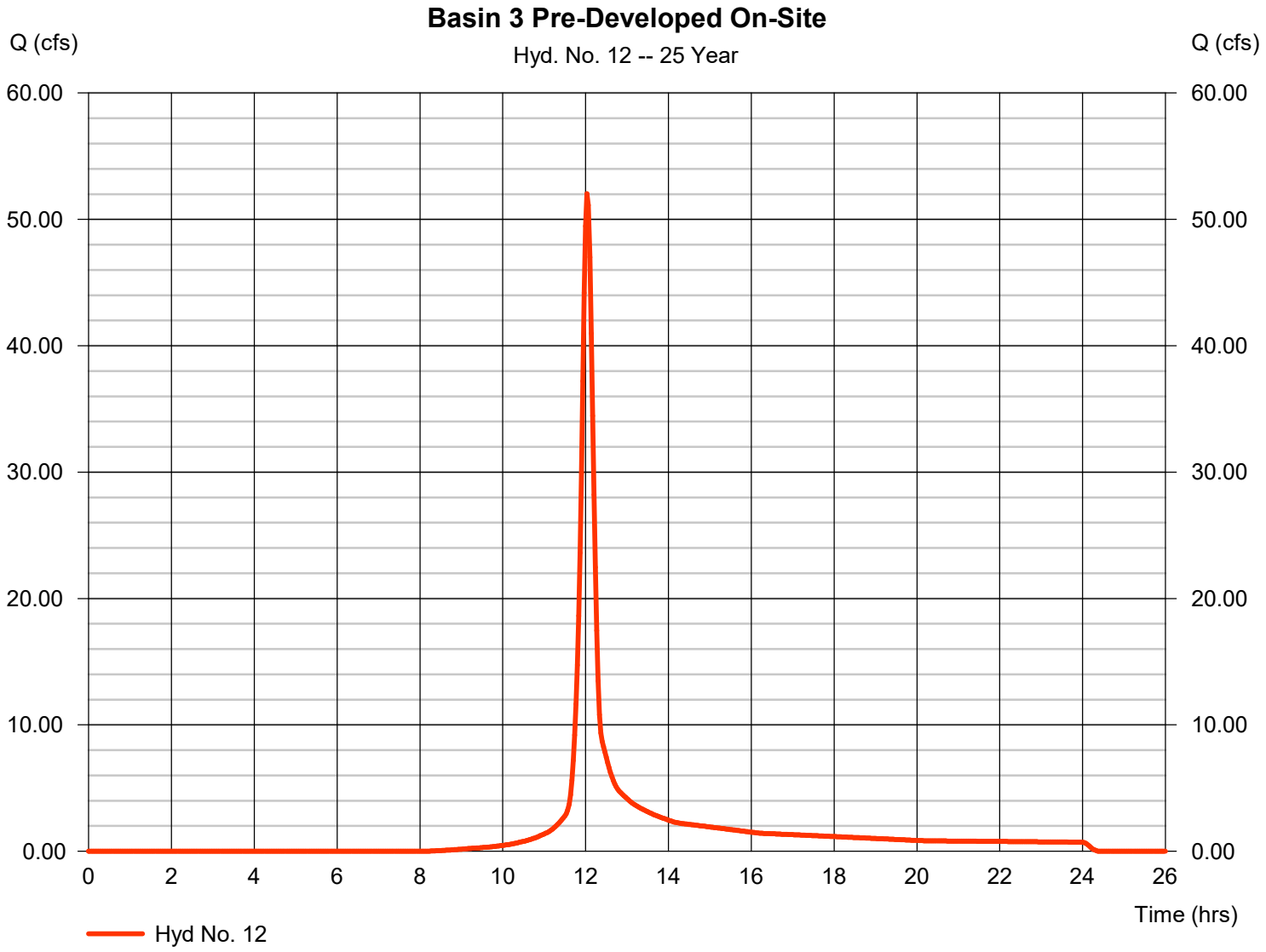
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 12

Basin 3 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 52.03 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 145,843 cuft
Drainage area	= 16.160 ac	Curve number	= 77.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.30 min
Total precip.	= 4.85 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



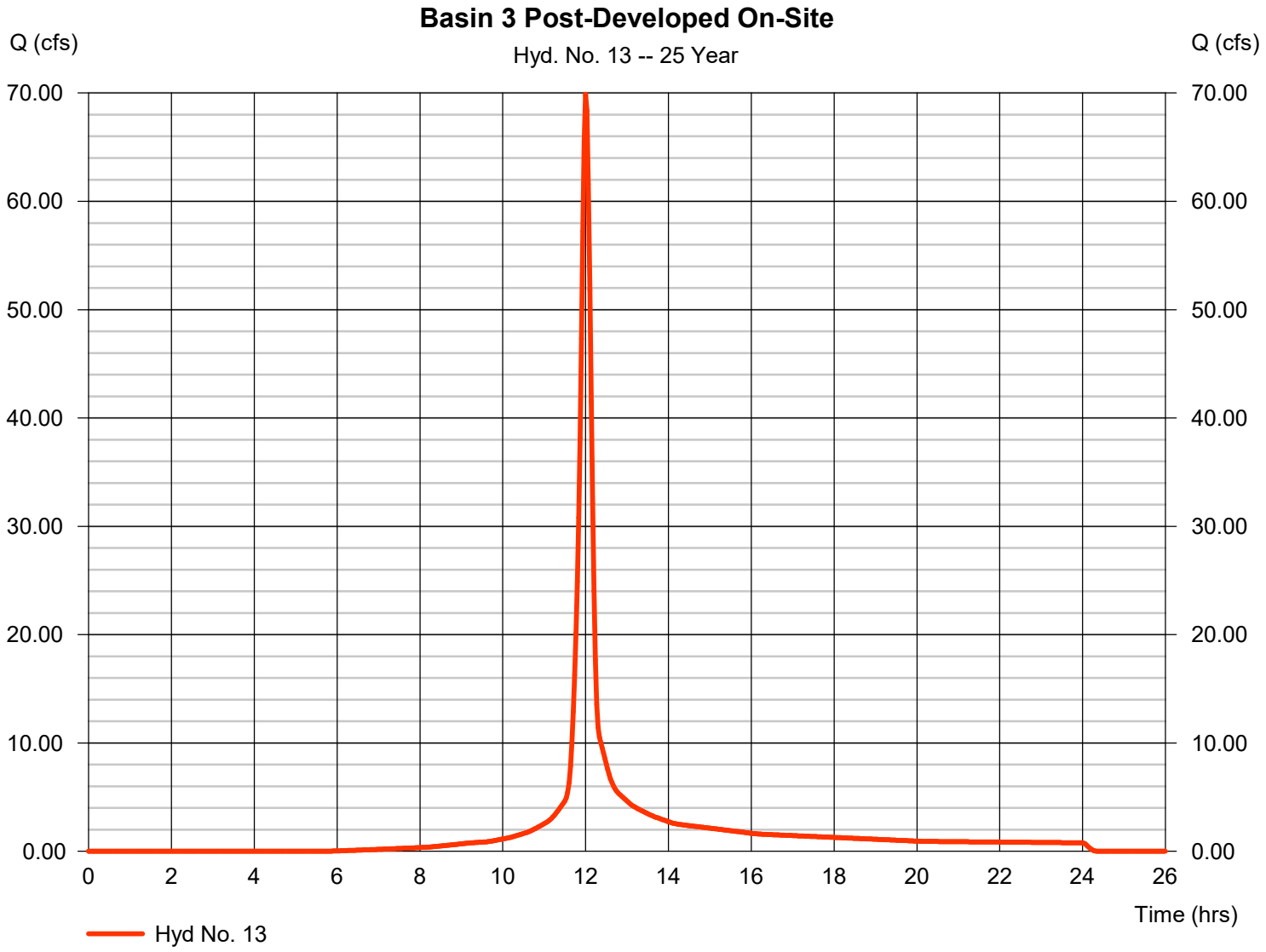
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 13

Basin 3 Post-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	69.88 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	183,407 cuft
Drainage area	=	15.170 ac	Curve number	=	85
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	4.85 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

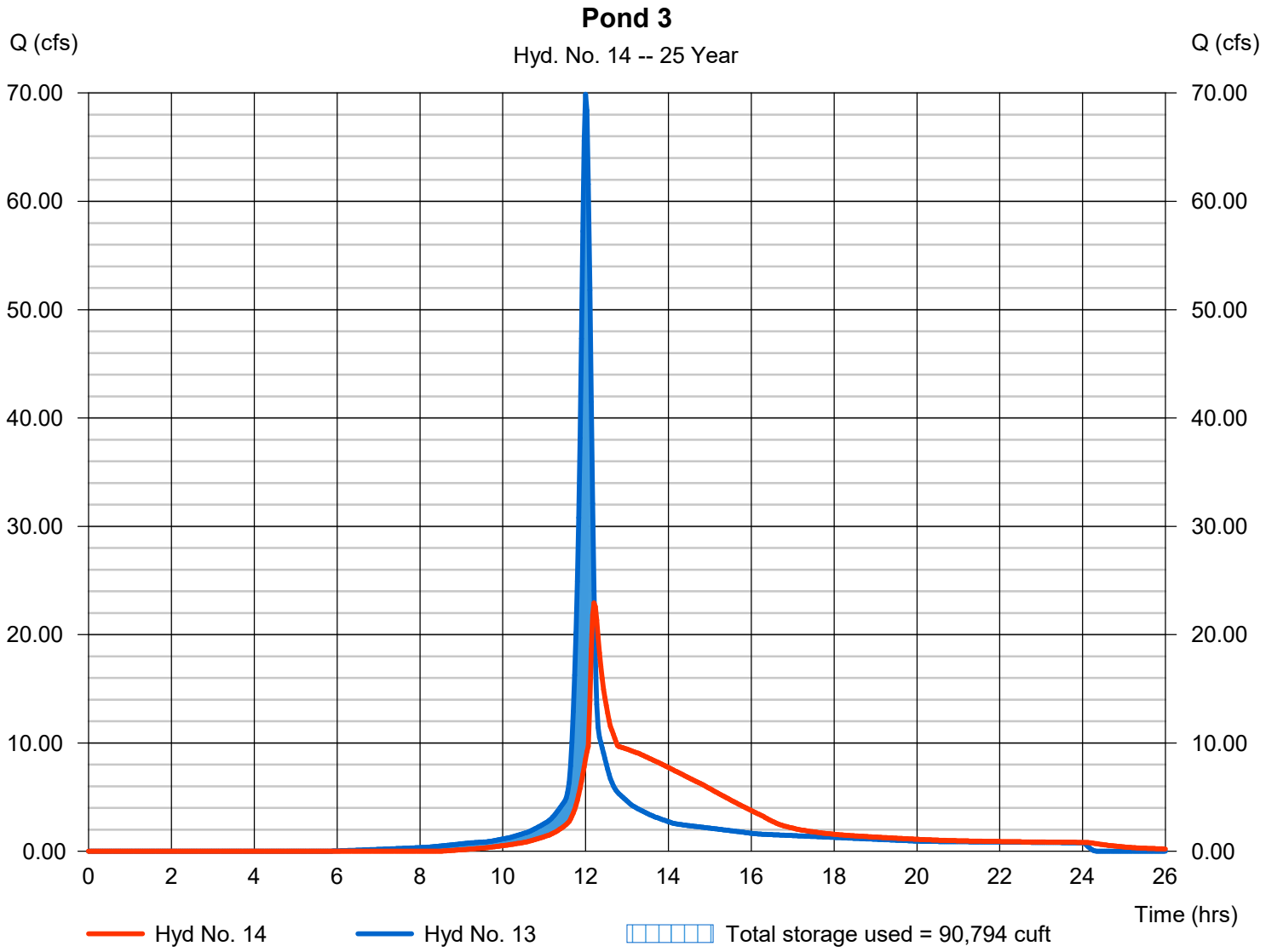
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 14

Pond 3

Hydrograph type	=	Reservoir	Peak discharge	=	22.93 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.20 hrs
Time interval	=	2 min	Hyd. volume	=	181,385 cuft
Inflow hyd. No.	=	13 - Basin 3 Post-Developed On-Site	Max. Elevation	=	657.68 ft
Reservoir name	=	Pond 3	Max. Storage	=	90,794 cuft

Storage Indication method used. Wet pond routing start elevation = 654.80 ft.



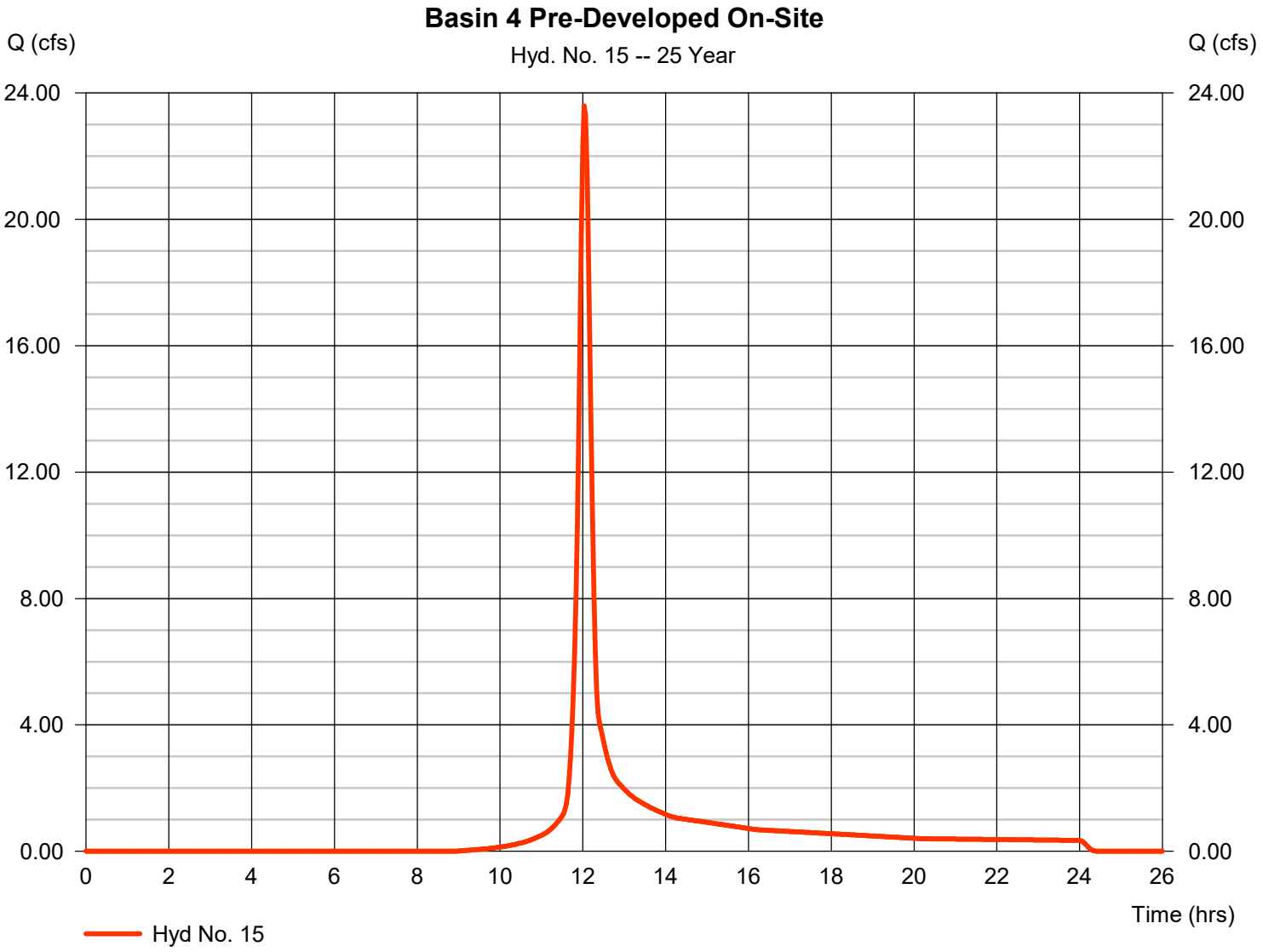
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 15

Basin 4 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 23.59 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 66,353 cuft
Drainage area	= 8.140 ac	Curve number	= 74.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.20 min
Total precip.	= 4.85 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



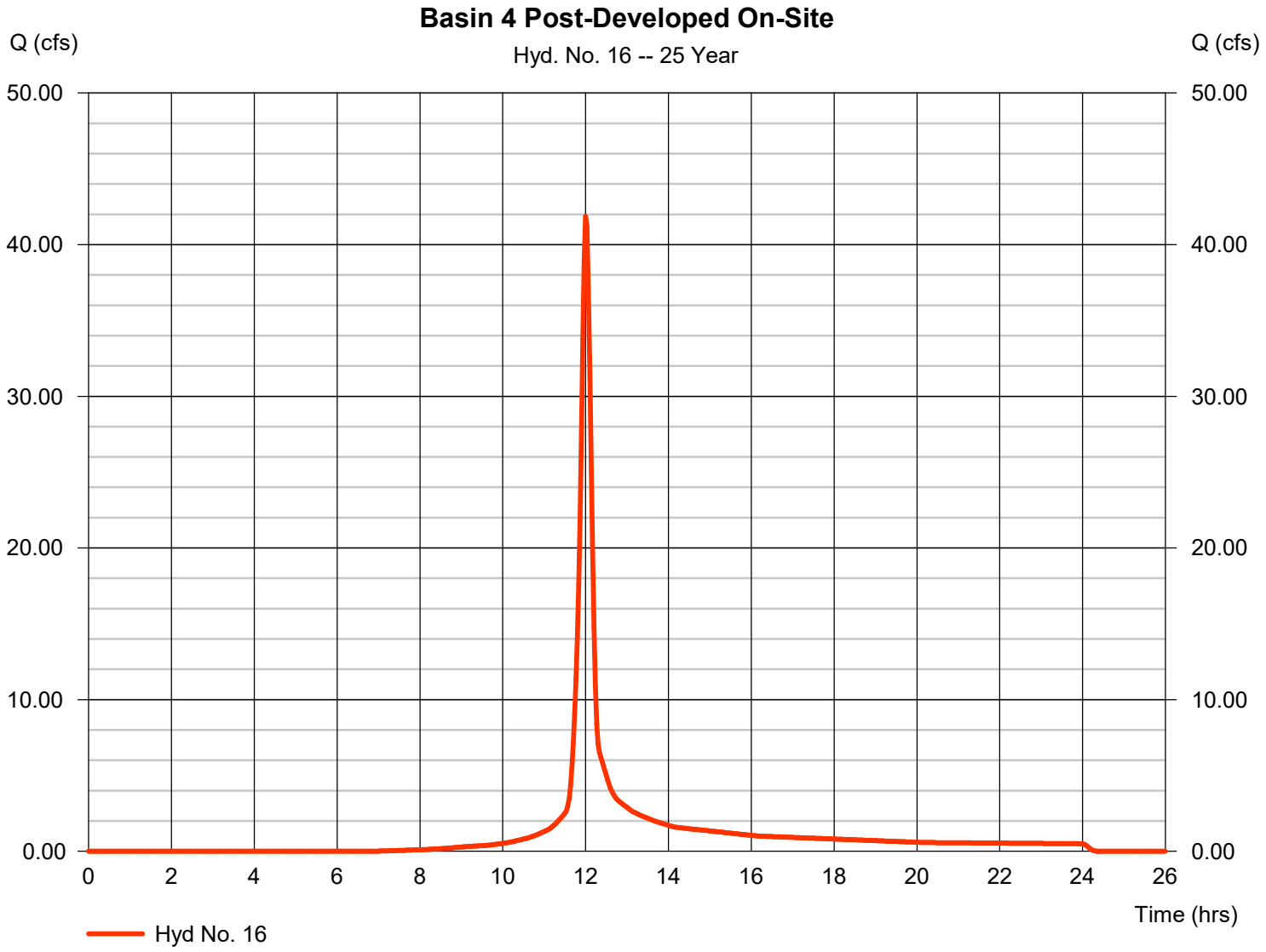
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 16

Basin 4 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 41.86 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 108,850 cuft
Drainage area	= 10.030 ac	Curve number	= 81.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 4.85 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

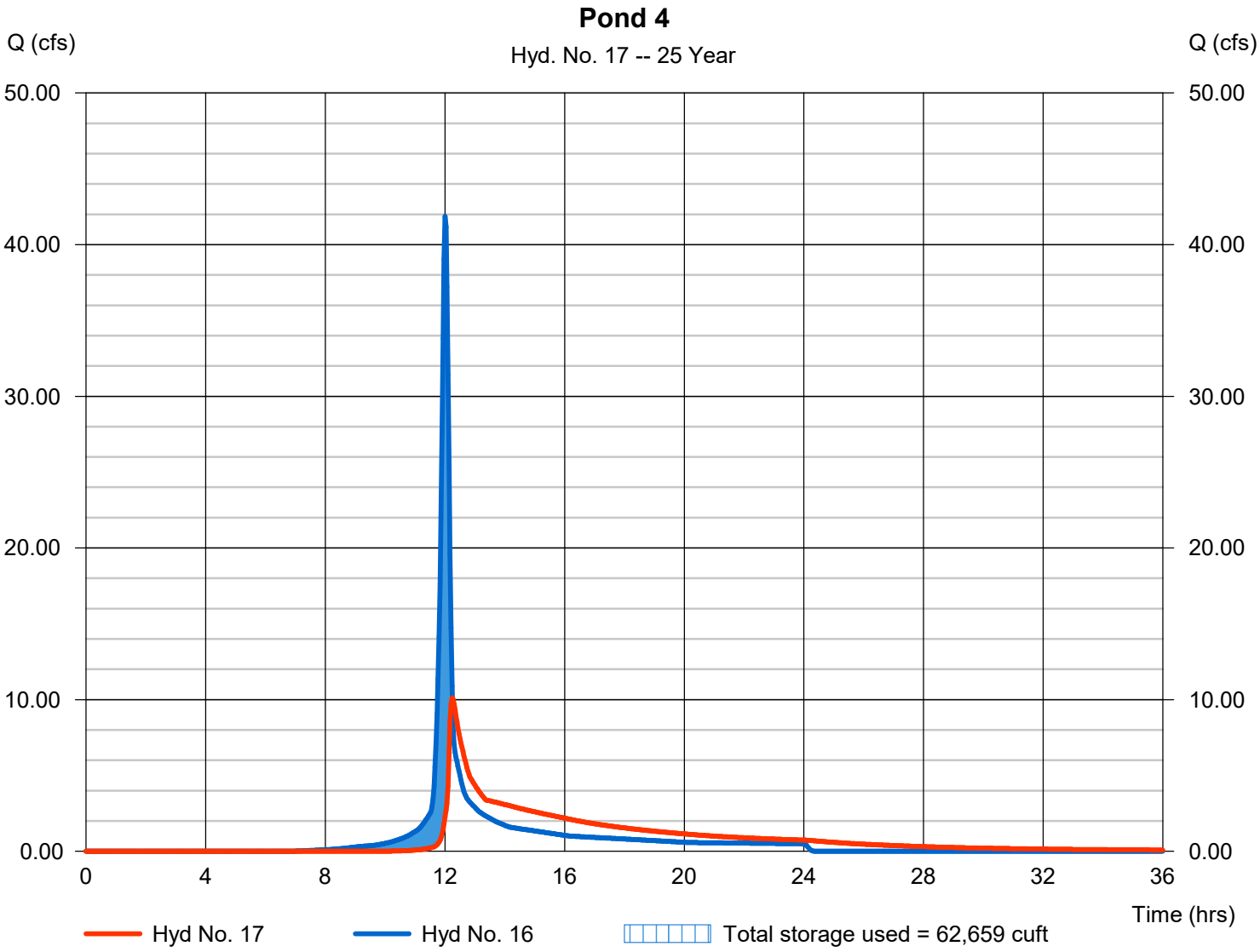
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 17

Pond 4

Hydrograph type	=	Reservoir	Peak discharge	=	10.12 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.23 hrs
Time interval	=	2 min	Hyd. volume	=	106,712 cuft
Inflow hyd. No.	=	16 - Basin 4 Post-Developed On-Site	Max. Elevation	=	705.68 ft
Reservoir name	=	Pond 4	Max. Storage	=	62,659 cuft

Storage Indication method used. Wet pond routing start elevation = 703.50 ft.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	62.48	2	728	232,313	------	------	------	Basin 1 Pre-Developed On-Site
2	SCS Runoff	76.17	2	728	279,653	------	------	------	Basin 1 Off-Site Pre-Developed
3	Manual	62.48	2	728	232,318	------	------	------	Basin 1 Pre-Developed Allowable
4	Combine	138.65	2	728	511,971	2, 3	------	------	Basin 1 Pre-Developed Combined All
5	SCS Runoff	90.70	2	724	284,092	------	------	------	Basin 1 Off-Site Post-Developed
6	SCS Runoff	134.17	2	722	376,257	------	------	------	Basin 1 On-Site Post-Developed
7	Combine	222.68	2	724	660,349	5, 6	------	------	Basin 1 Combined
8	Reservoir	84.05	2	738	655,193	7	635.64	291,458	Pond 1
9	SCS Runoff	67.64	2	722	191,624	------	------	------	Basin 2 Pre-Developed On-Site
10	SCS Runoff	110.20	2	720	287,116	------	------	------	Basin 2 Post-Developed On-Site
11	Reservoir	9.992	2	760	281,611	10	636.52	180,381	Pond 2
12	SCS Runoff	58.07	2	722	162,758	------	------	------	Basin 3 Pre-Developed On-Site
13	SCS Runoff	76.62	2	720	201,788	------	------	------	Basin 3 Post-Developed On-Site
14	Reservoir	30.58	2	732	199,766	13	657.82	94,989	Pond 3
15	SCS Runoff	26.54	2	722	74,502	------	------	------	Basin 4 Pre-Developed On-Site
16	SCS Runoff	46.27	2	720	120,543	------	------	------	Basin 4 Post-Developed On-Site
17	Reservoir	15.14	2	732	118,405	16	705.81	66,174	Pond 4

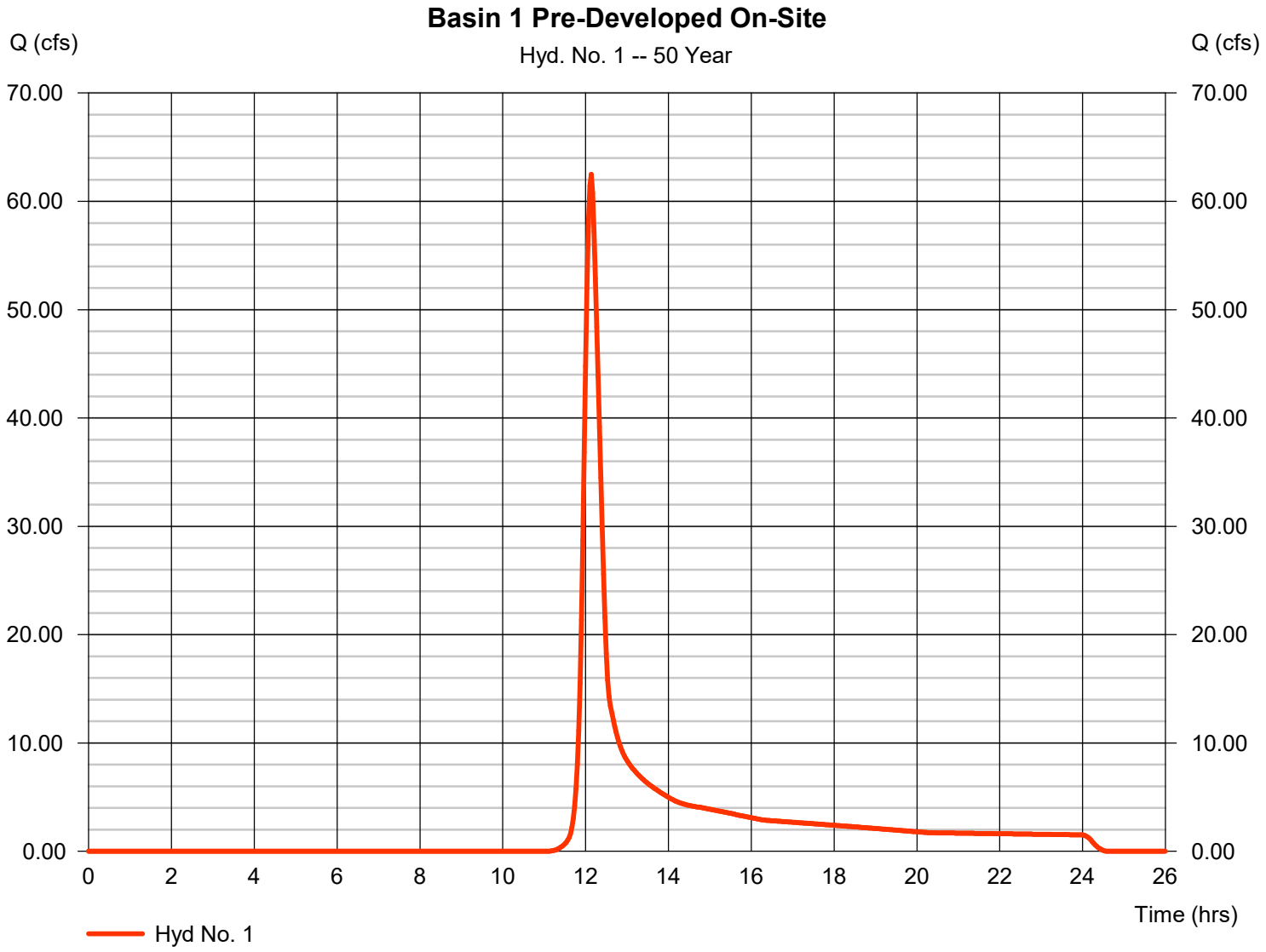
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 1

Basin 1 Pre-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	62.48 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.13 hrs
Time interval	=	2 min	Hyd. volume	=	232,313 cuft
Drainage area	=	40.220 ac	Curve number	=	62
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	22.40 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



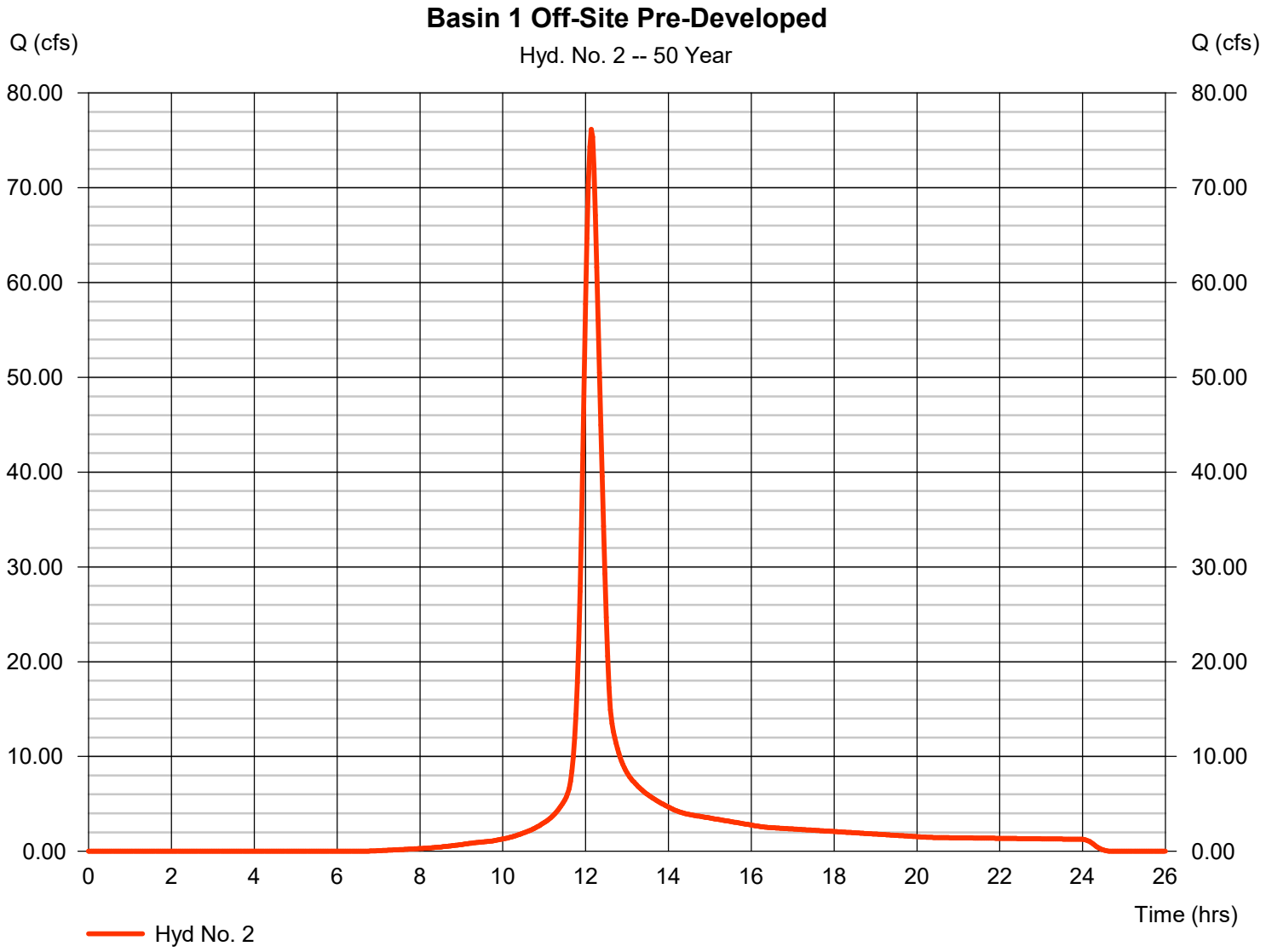
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 2

Basin 1 Off-Site Pre-Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 76.17 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 279,653 cuft
Drainage area	= 24.450 ac	Curve number	= 81.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 23.50 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



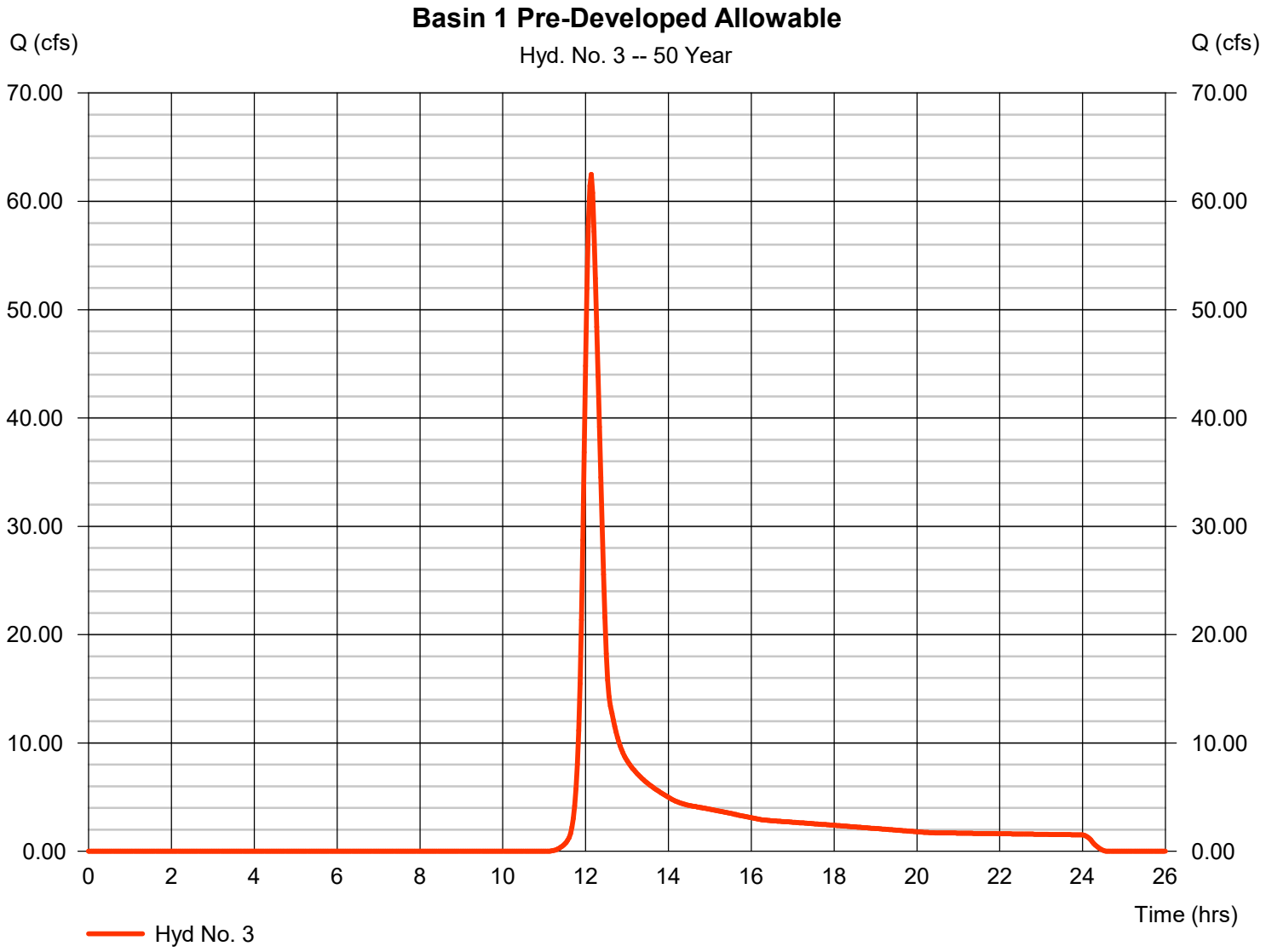
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 3

Basin 1 Pre-Developed Allowable

Hydrograph type	= Manual	Peak discharge	= 62.48 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 232,318 cuft



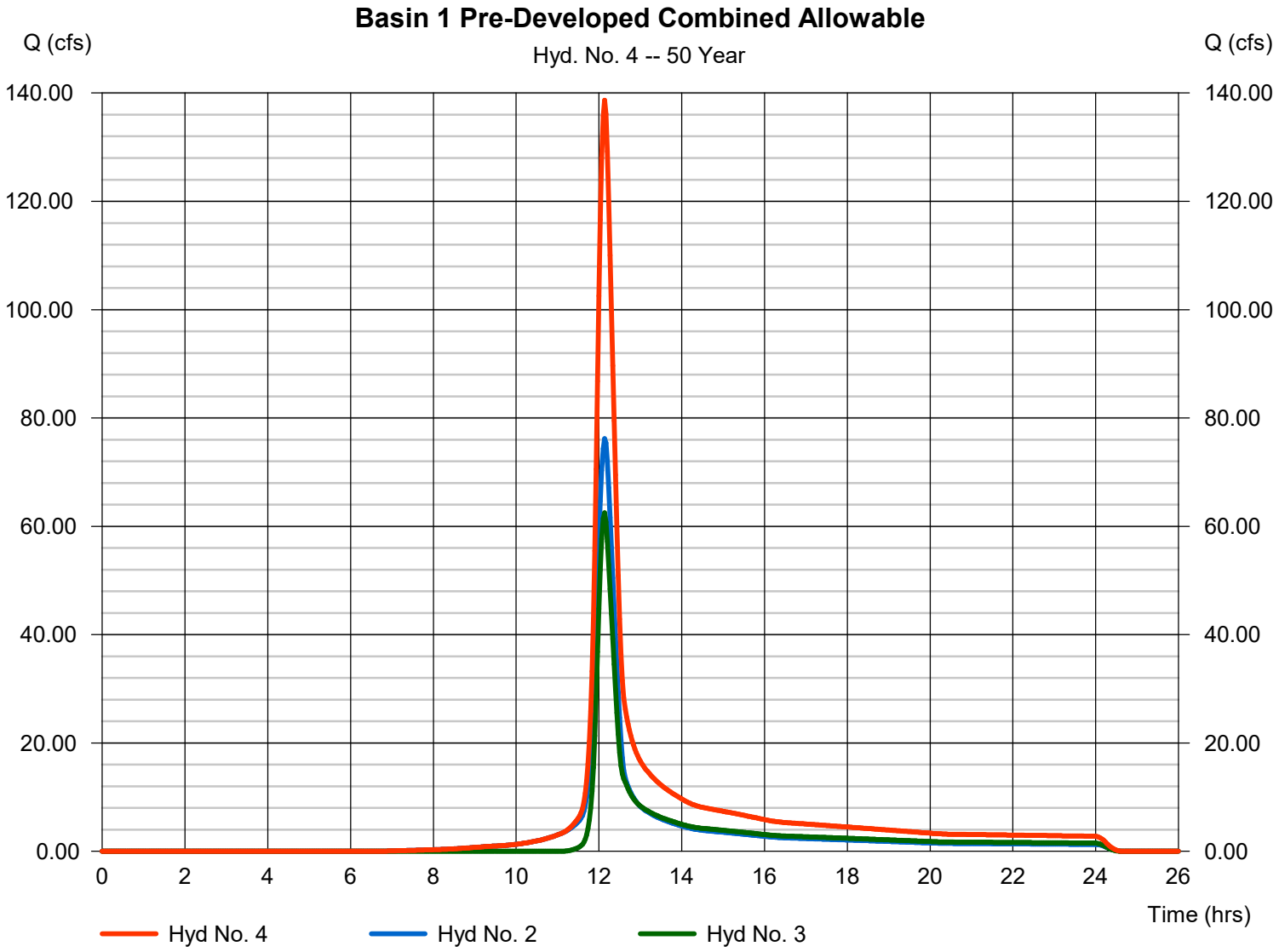
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 4

Basin 1 Pre-Developed Combined Allowable

Hydrograph type	= Combine	Peak discharge	= 138.65 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 511,971 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 24.450 ac



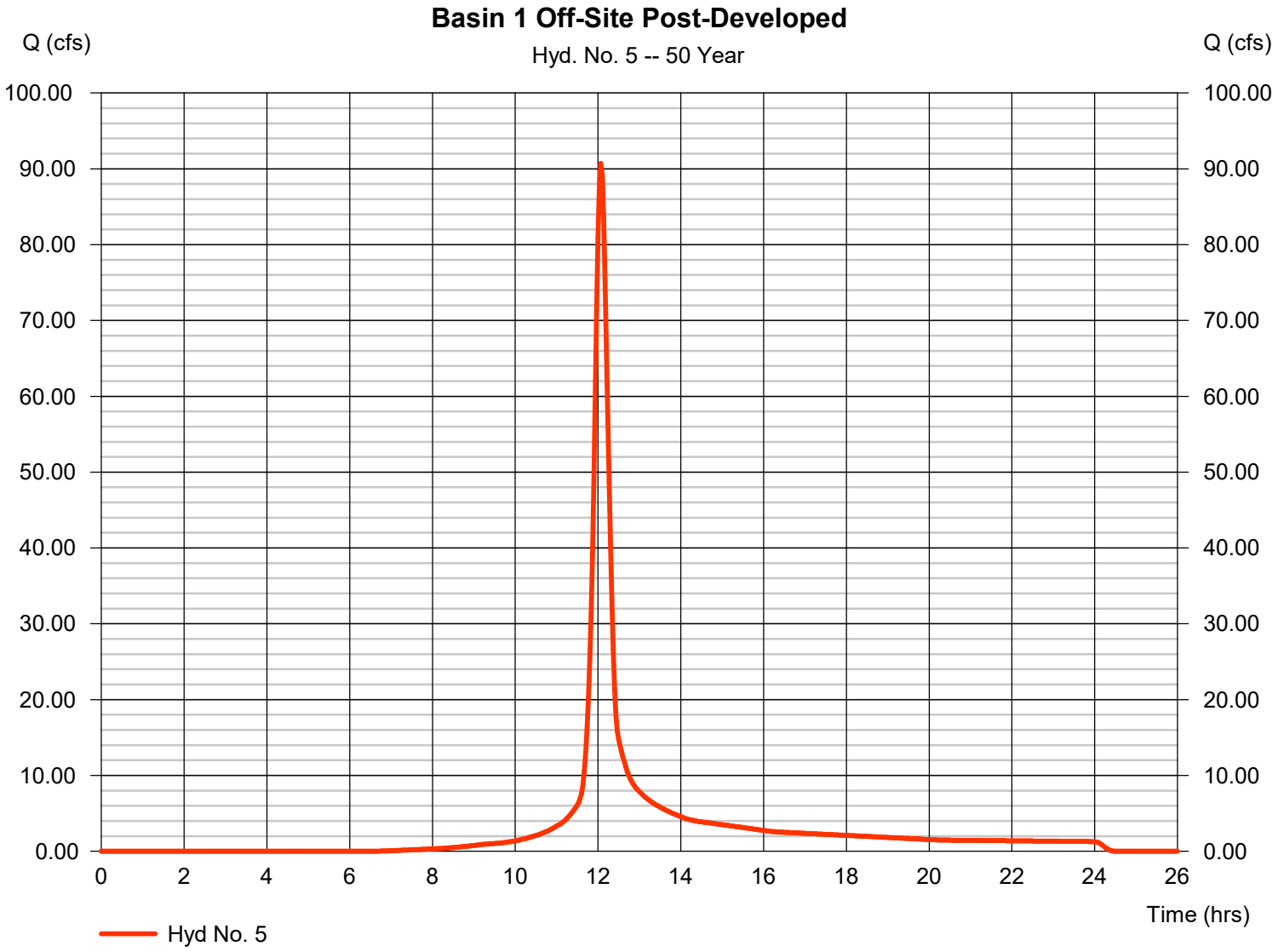
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 5

Basin 1 Off-Site Post-Developed

Hydrograph type	=	SCS Runoff	Peak discharge	=	90.70 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.07 hrs
Time interval	=	2 min	Hyd. volume	=	284,092 cuft
Drainage area	=	24.450 ac	Curve number	=	81.4
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	20.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



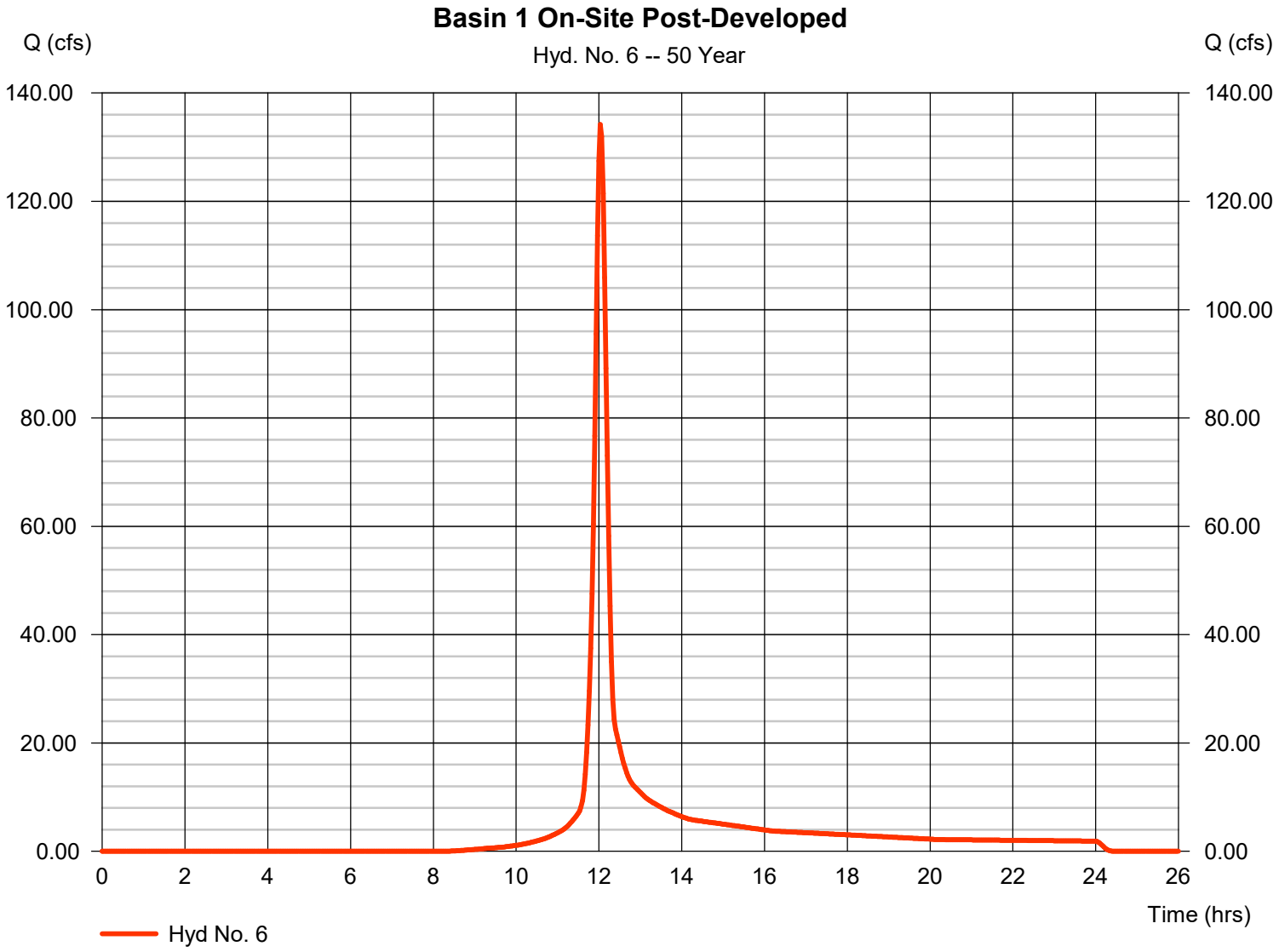
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 6

Basin 1 On-Site Post-Developed

Hydrograph type	=	SCS Runoff	Peak discharge	=	134.17 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	376,257 cuft
Drainage area	=	39.750 ac	Curve number	=	75.7
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	13.50 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



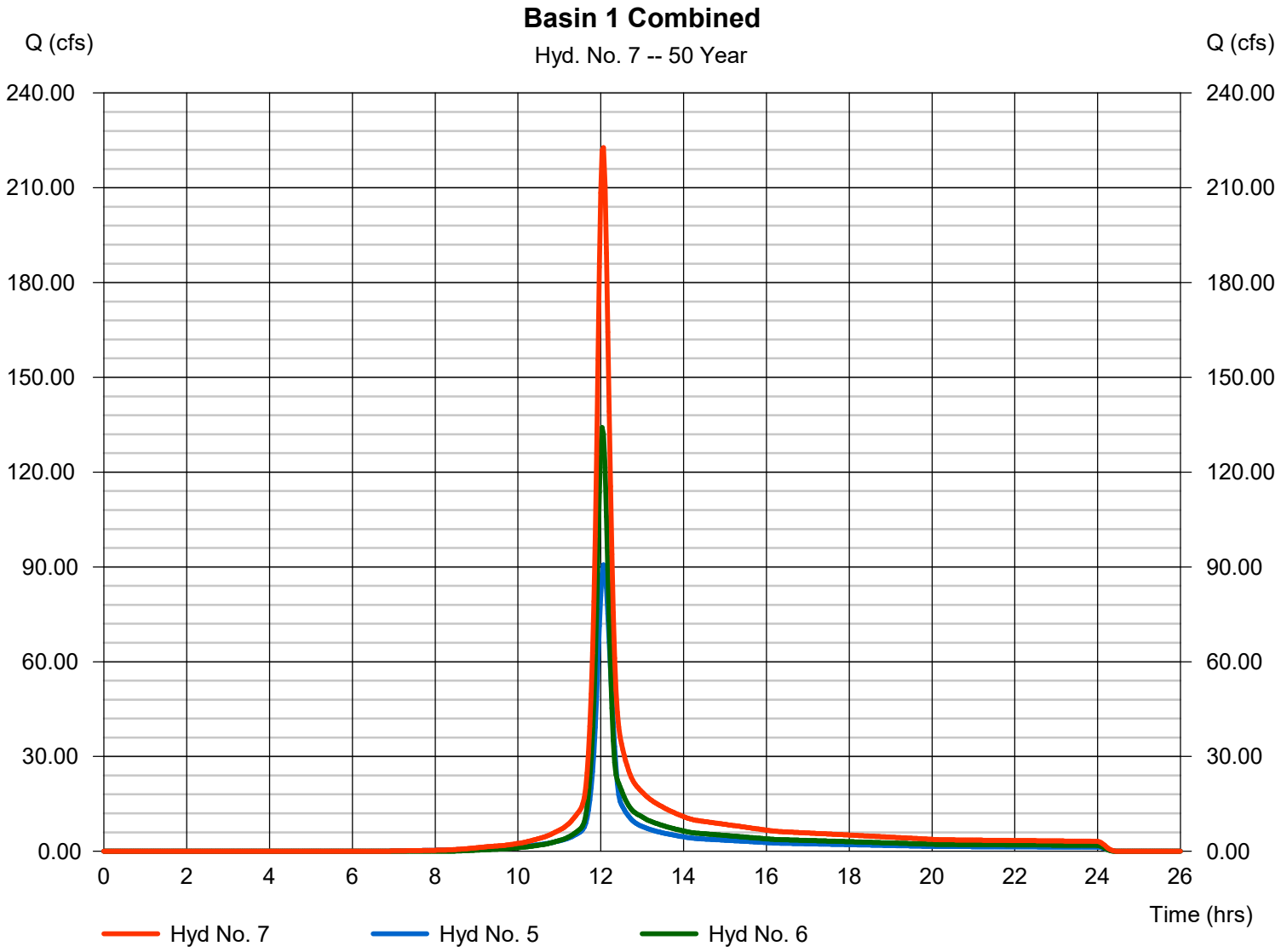
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 7

Basin 1 Combined

Hydrograph type	= Combine	Peak discharge	= 222.68 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 660,349 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 64.200 ac



Hydrograph Report

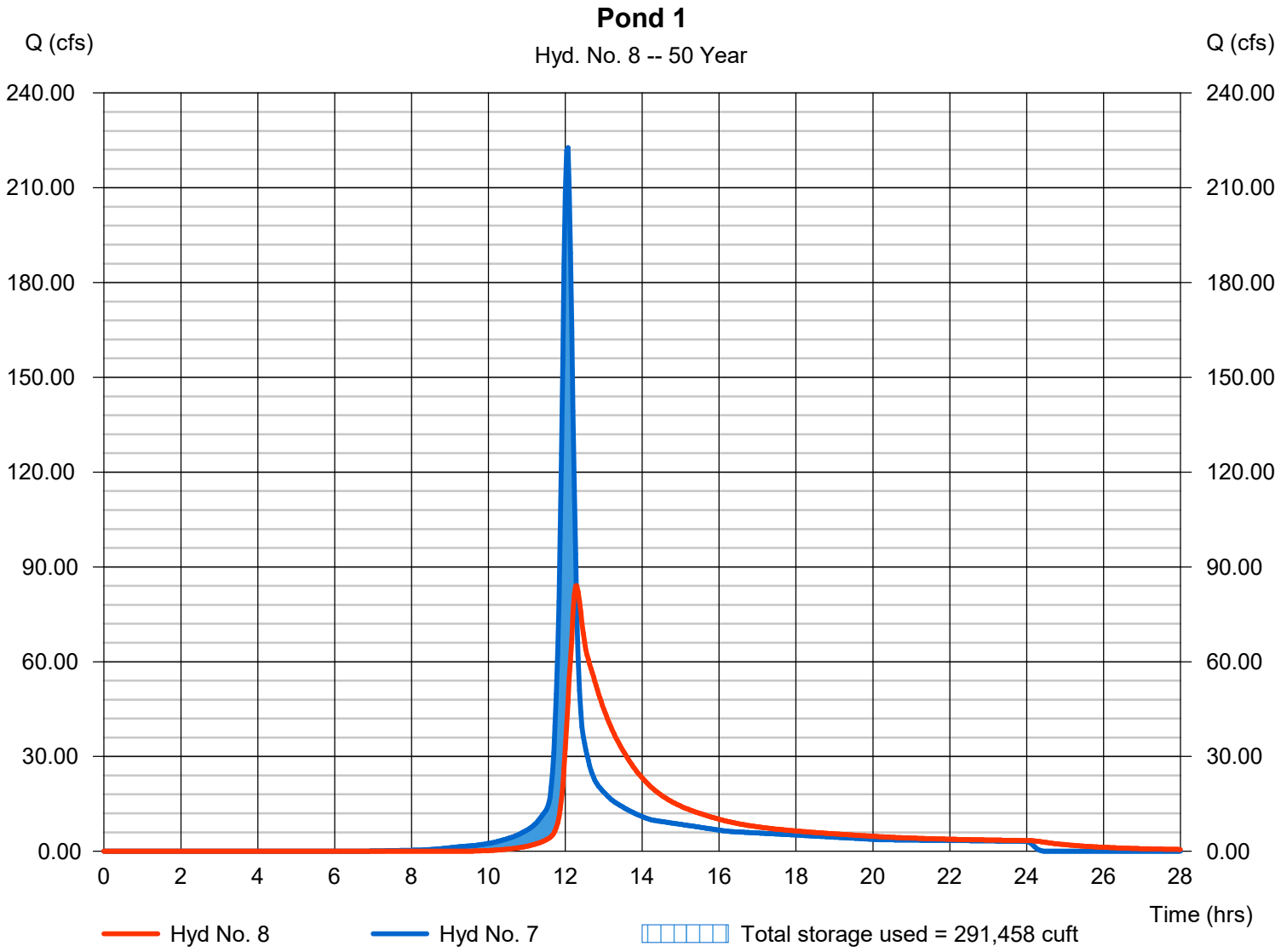
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 8

Pond 1

Hydrograph type	= Reservoir	Peak discharge	= 84.05 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 655,193 cuft
Inflow hyd. No.	= 7 - Basin 1 Combined	Max. Elevation	= 635.64 ft
Reservoir name	= Pond 1	Max. Storage	= 291,458 cuft

Storage Indication method used. Wet pond routing start elevation = 631.80 ft.

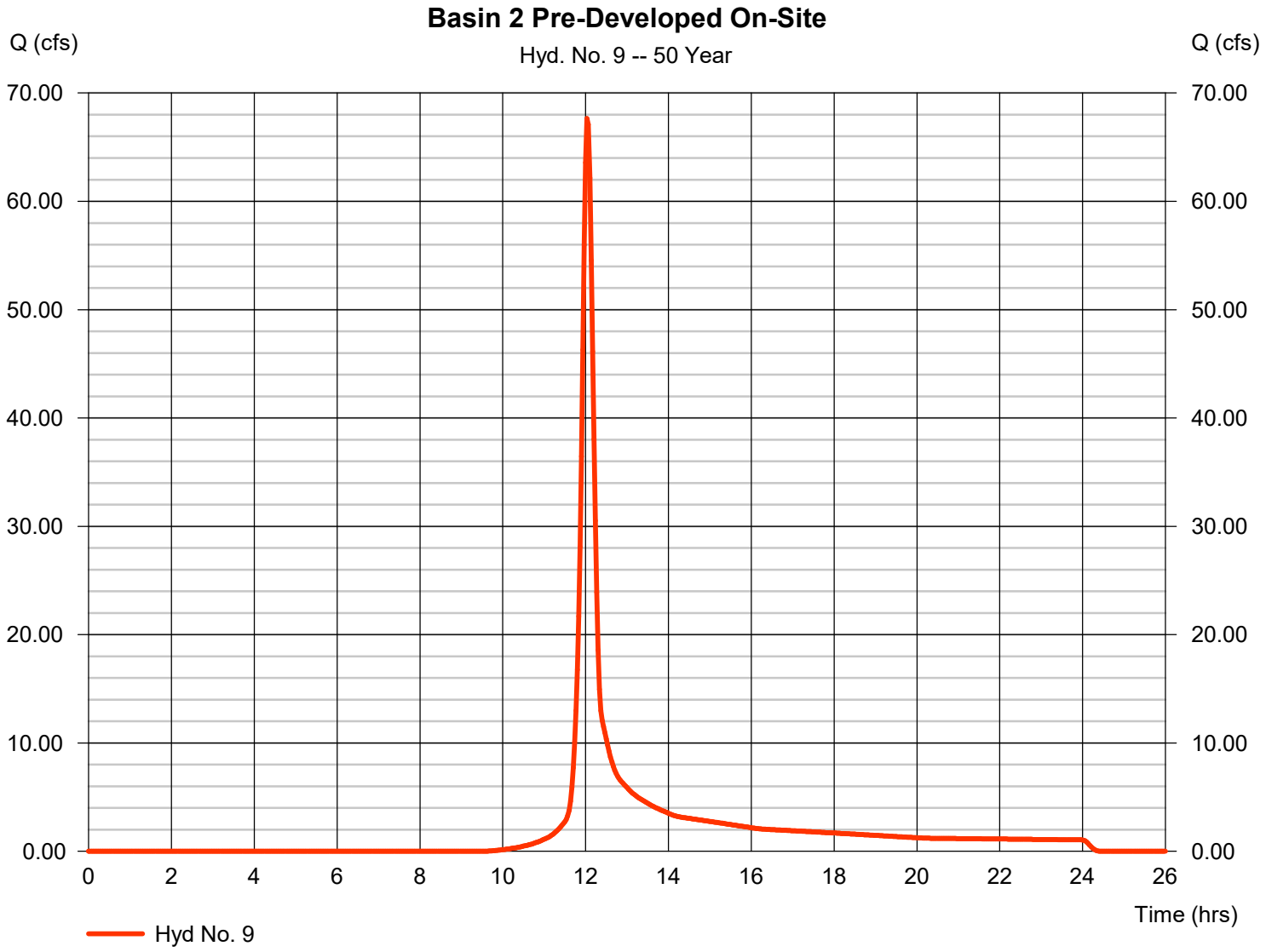


Hydrograph Report

Hyd. No. 9

Basin 2 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 67.64 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 191,624 cuft
Drainage area	= 24.310 ac	Curve number	= 70.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.40 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



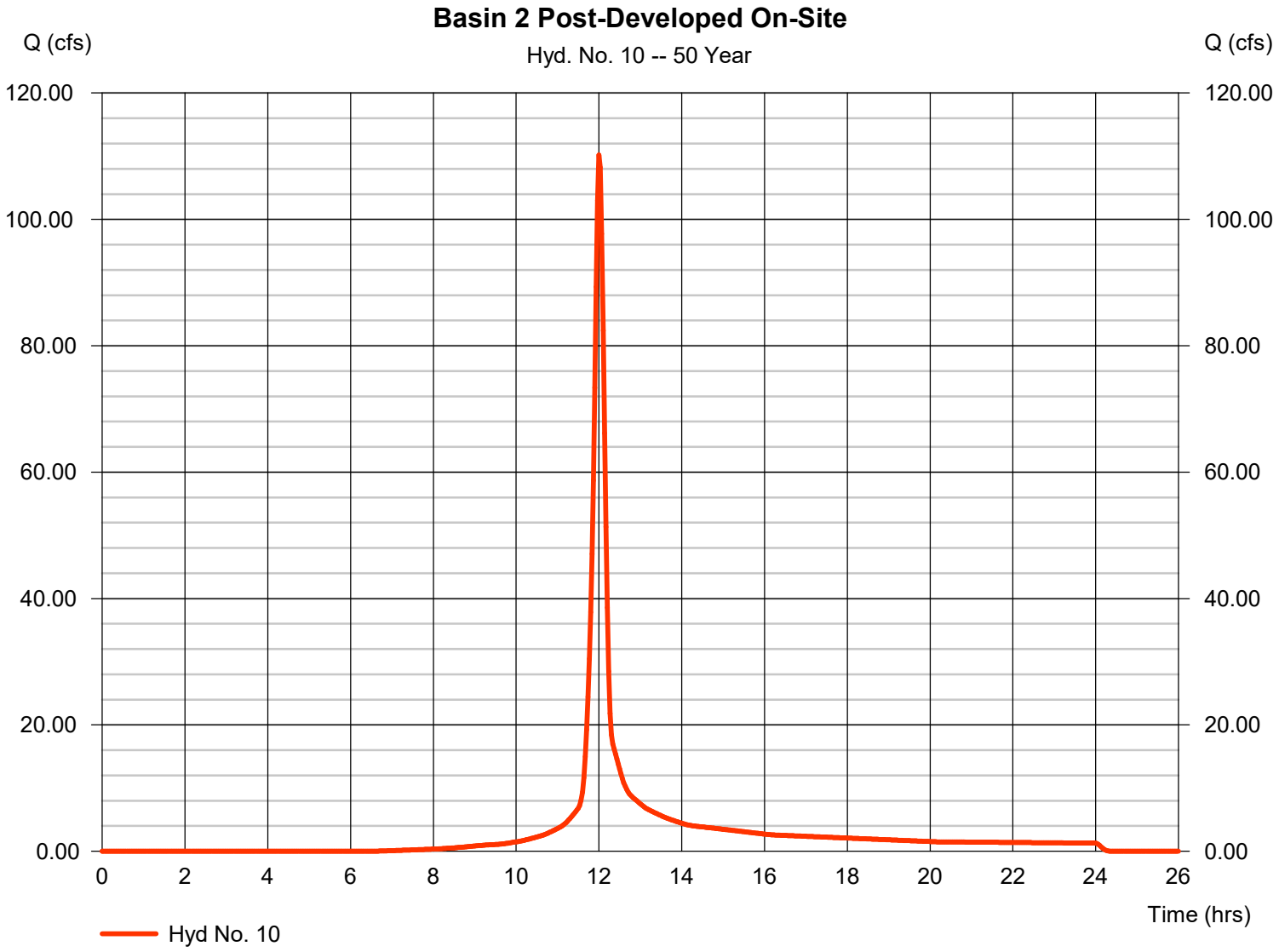
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 10

Basin 2 Post-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	110.20 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	287,116 cuft
Drainage area	=	23.890 ac	Curve number	=	81.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

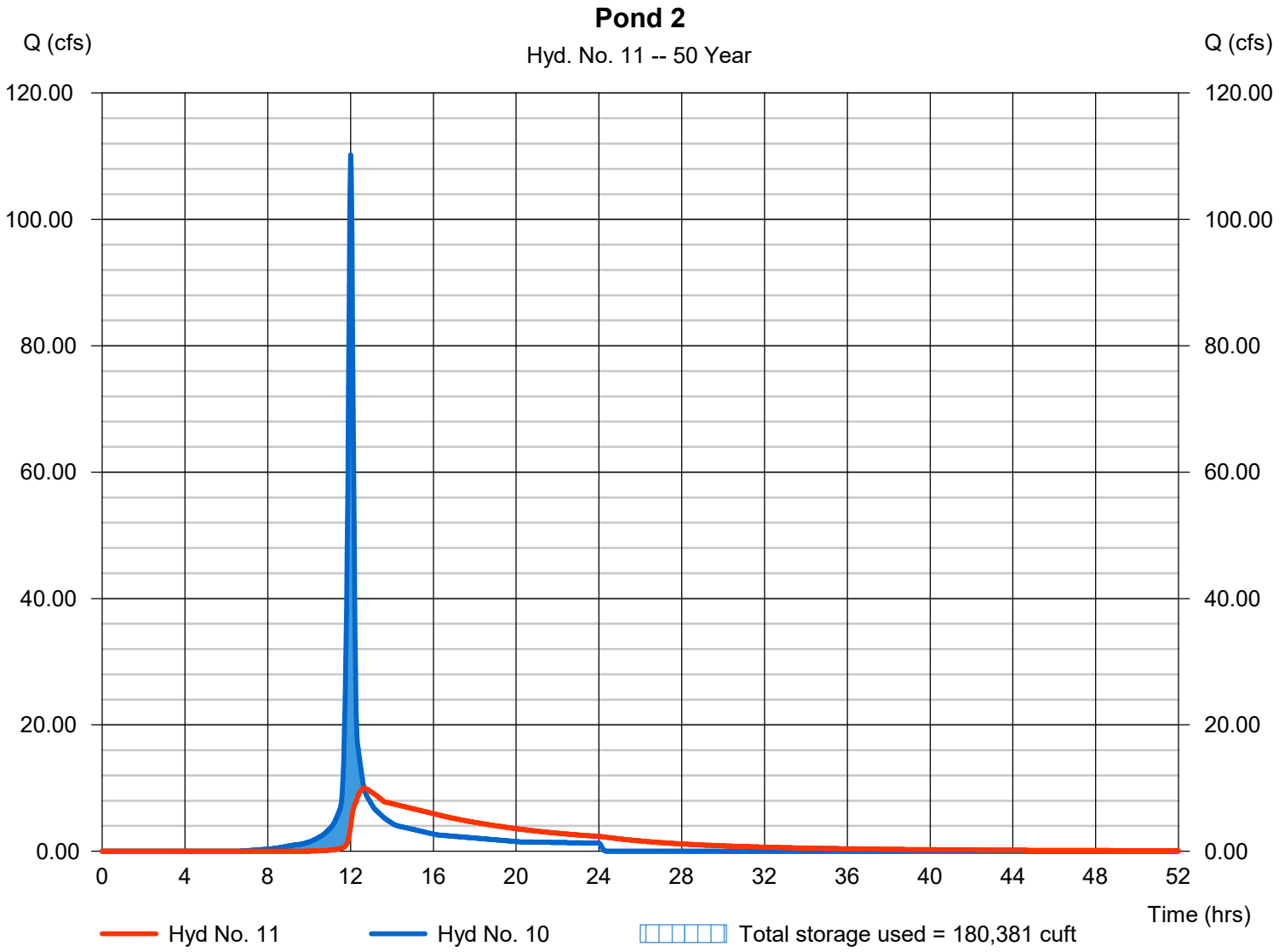
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 11

Pond 2

Hydrograph type	=	Reservoir	Peak discharge	=	9.992 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.67 hrs
Time interval	=	2 min	Hyd. volume	=	281,611 cuft
Inflow hyd. No.	=	10 - Basin 2 Post-Developed On-Site	Max. Elevation	=	636.52 ft
Reservoir name	=	Pond 2	Max. Storage	=	180,381 cuft

Storage Indication method used. Wet pond routing start elevation = 633.50 ft.

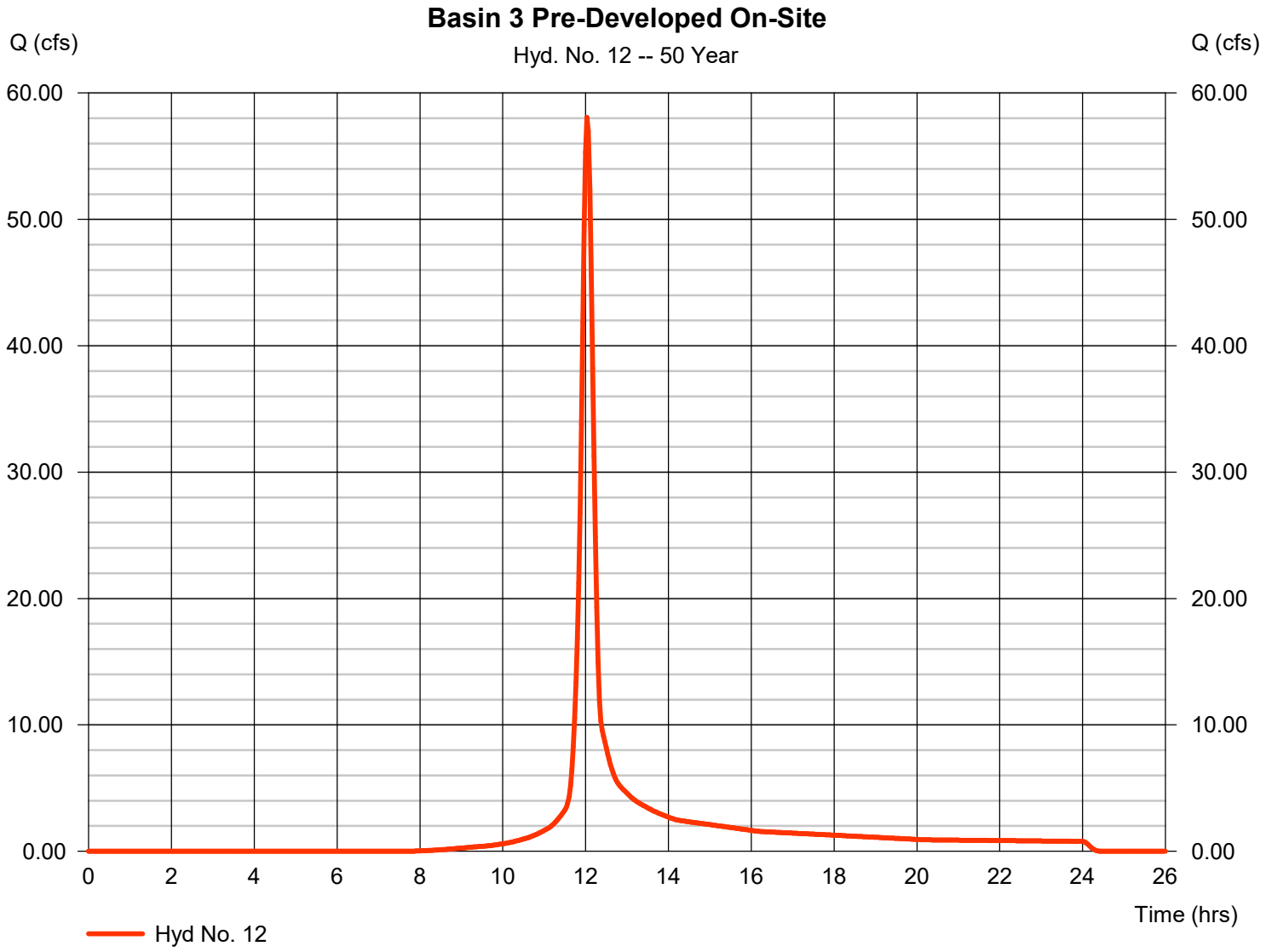


Hydrograph Report

Hyd. No. 12

Basin 3 Pre-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	58.07 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	162,758 cuft
Drainage area	=	16.160 ac	Curve number	=	77.6
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.30 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



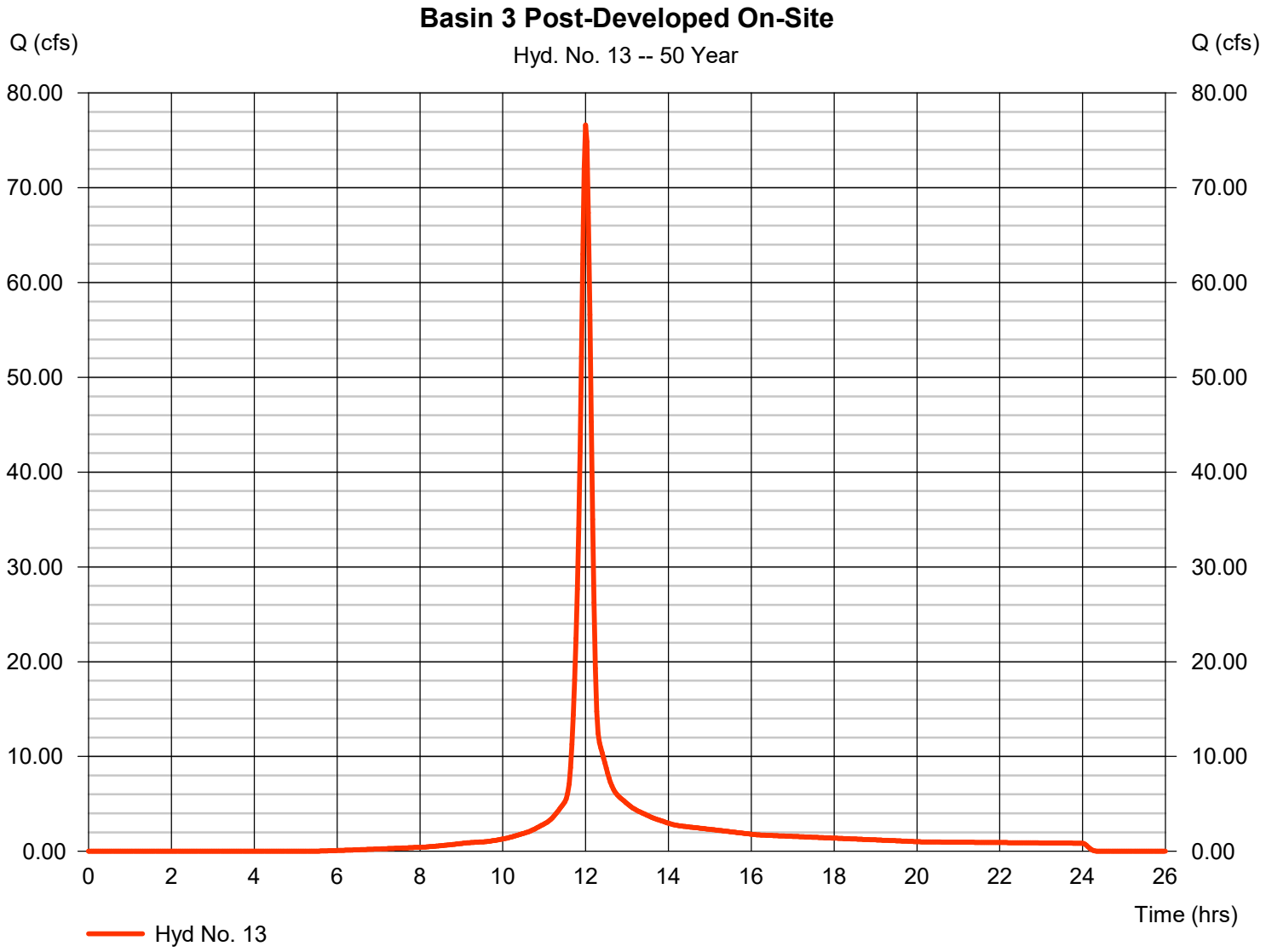
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 13

Basin 3 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 76.62 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 201,788 cuft
Drainage area	= 15.170 ac	Curve number	= 85
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

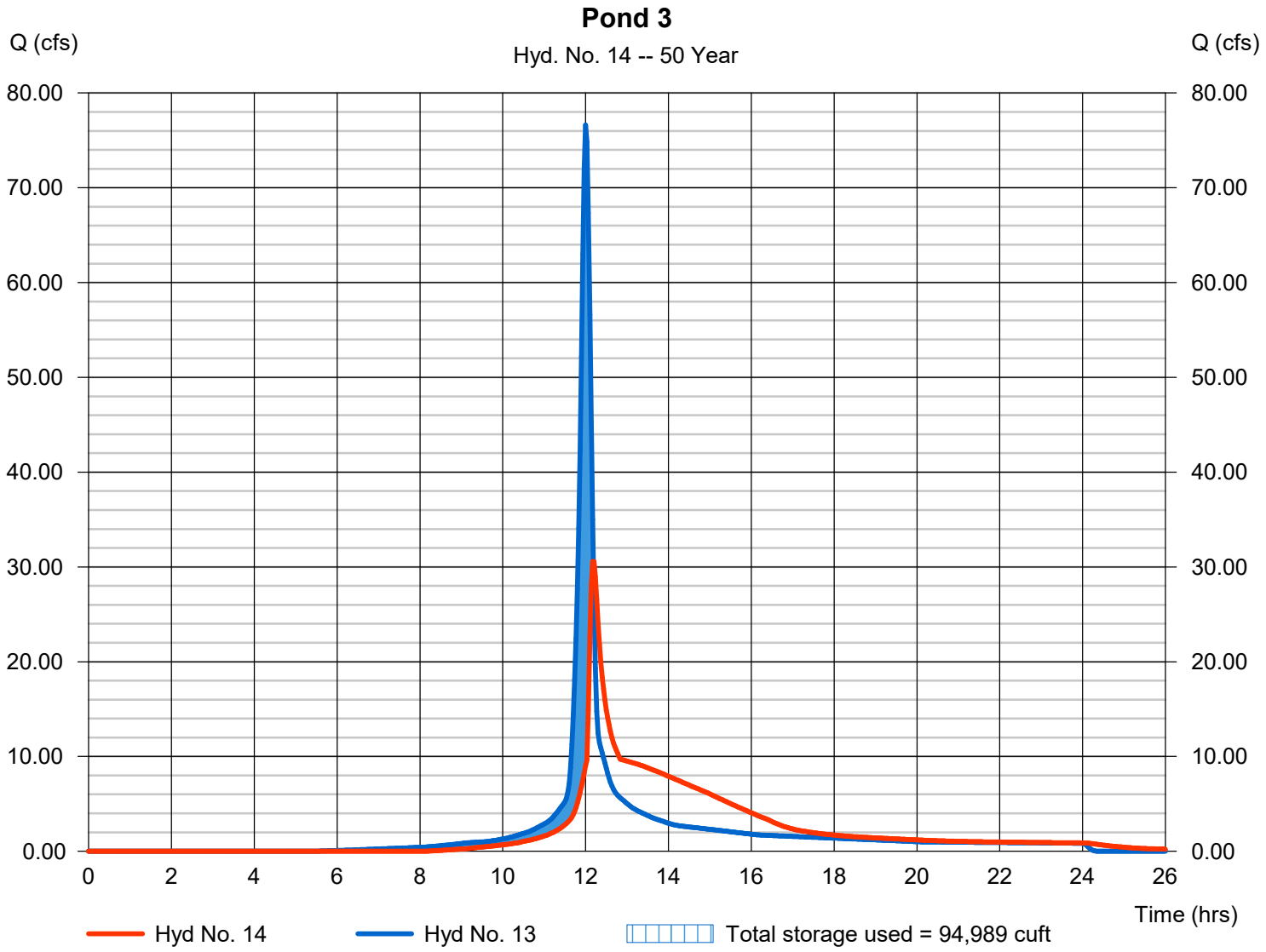
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 14

Pond 3

Hydrograph type	=	Reservoir	Peak discharge	=	30.58 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.20 hrs
Time interval	=	2 min	Hyd. volume	=	199,766 cuft
Inflow hyd. No.	=	13 - Basin 3 Post-Developed On-Site	Max. Elevation	=	657.82 ft
Reservoir name	=	Pond 3	Max. Storage	=	94,989 cuft

Storage Indication method used. Wet pond routing start elevation = 654.80 ft.



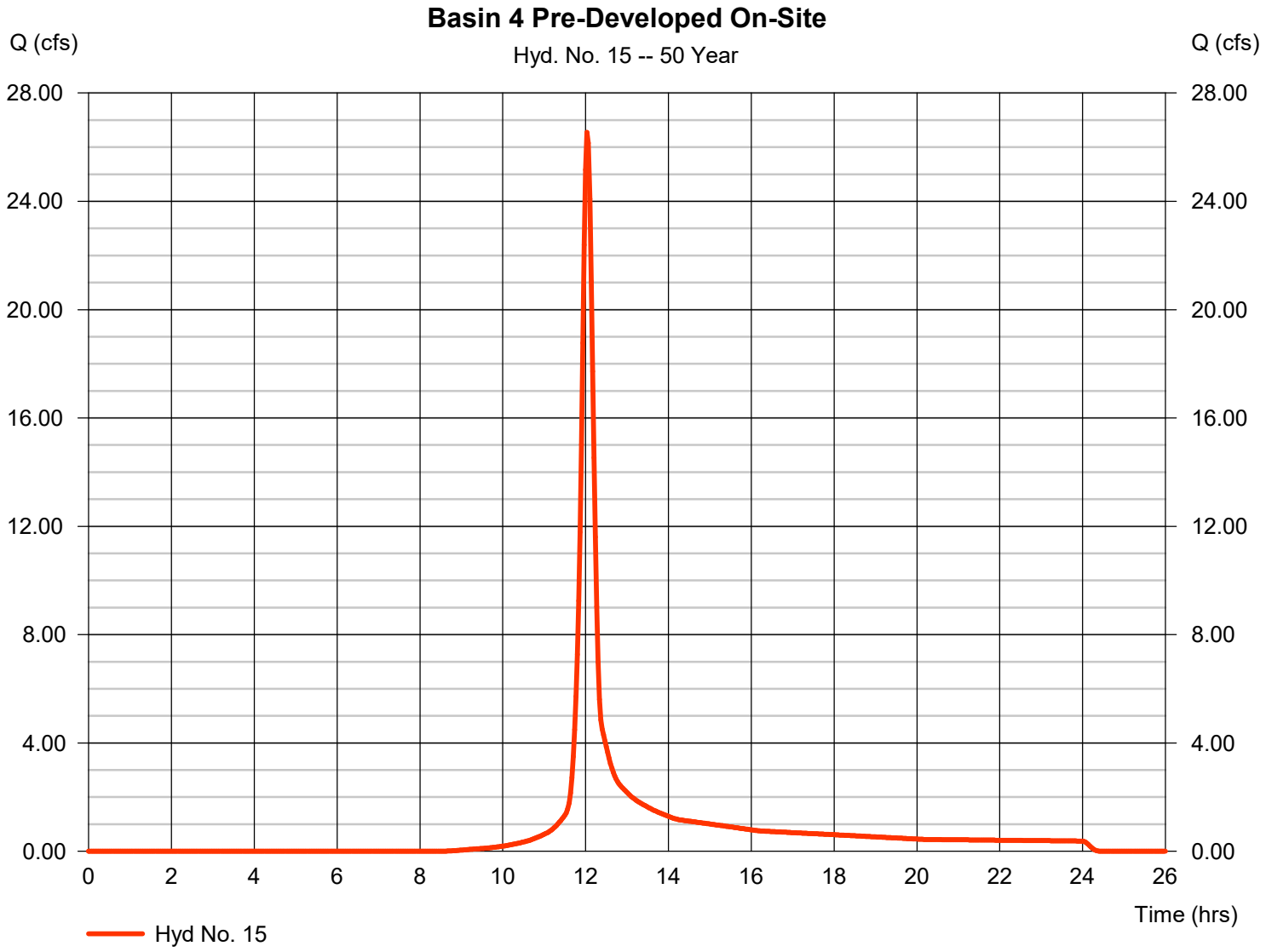
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 15

Basin 4 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 26.54 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 74,502 cuft
Drainage area	= 8.140 ac	Curve number	= 74.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.20 min
Total precip.	= 5.20 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



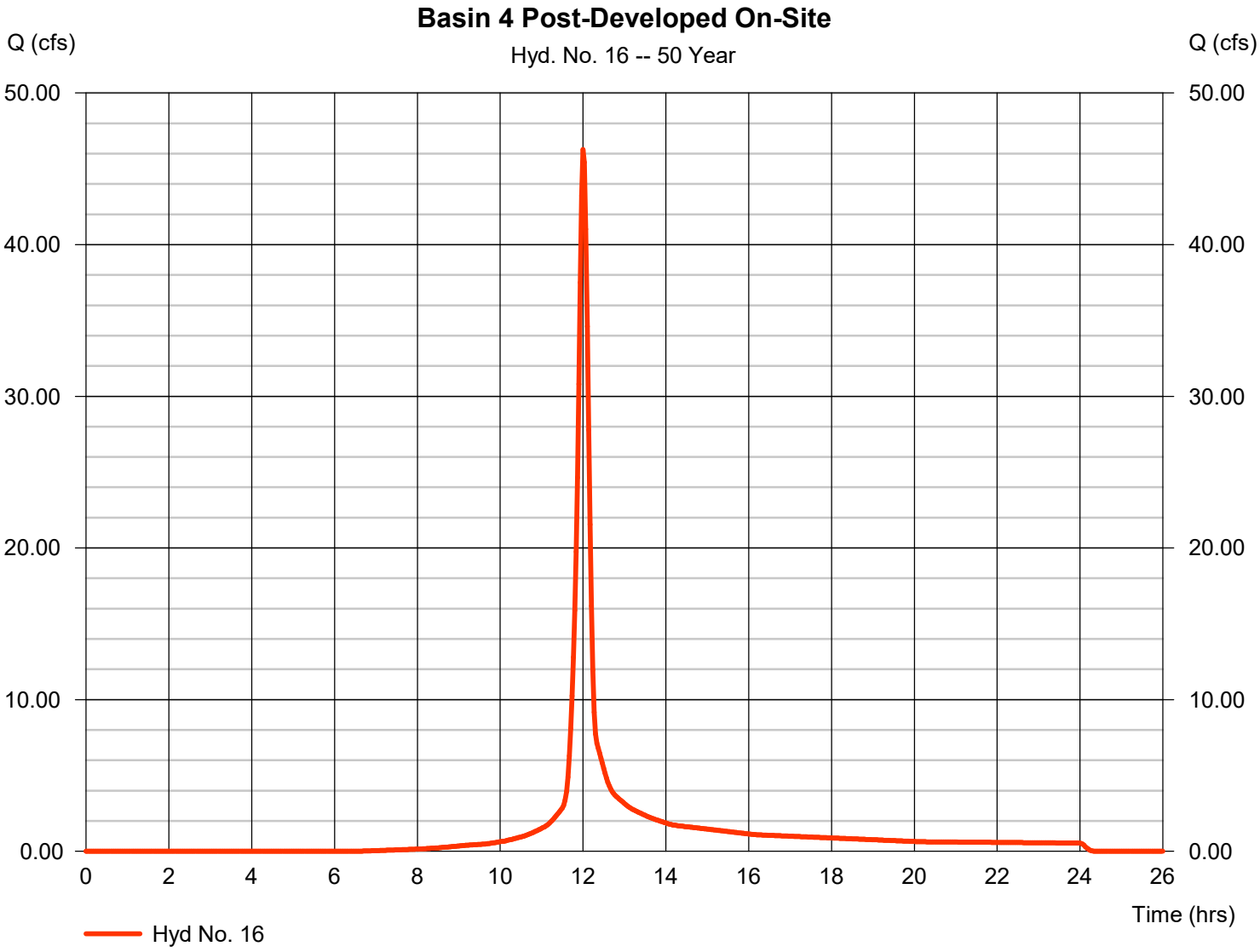
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 16

Basin 4 Post-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	46.27 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	120,543 cuft
Drainage area	=	10.030 ac	Curve number	=	81.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	5.20 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

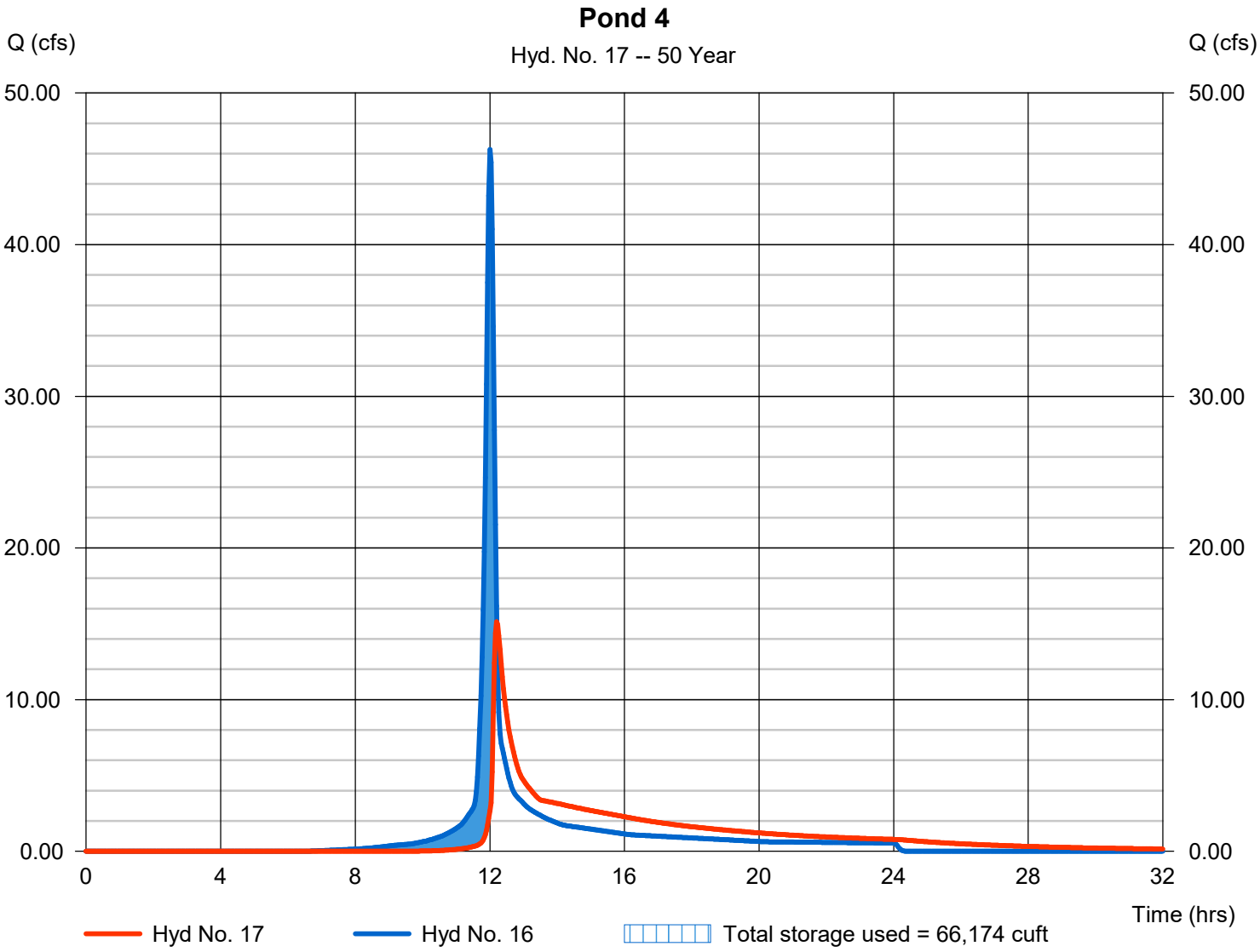
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 17

Pond 4

Hydrograph type	=	Reservoir	Peak discharge	=	15.14 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.20 hrs
Time interval	=	2 min	Hyd. volume	=	118,405 cuft
Inflow hyd. No.	=	16 - Basin 4 Post-Developed On-Site	Max. Elevation	=	705.81 ft
Reservoir name	=	Pond 4	Max. Storage	=	66,174 cuft

Storage Indication method used. Wet pond routing start elevation = 703.50 ft.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	76.12	2	728	277,596	------	------	------	Basin 1 Pre-Developed On-Site
2	SCS Runoff	86.13	2	728	316,647	------	------	------	Basin 1 Off-Site Pre-Developed
3	Manual	76.12	2	728	277,608	------	------	------	Basin 1 Pre-Developed Allowable
4	Combine	162.25	2	728	594,255	2, 3	------	------	Basin 1 Pre-Developed Combined All
5	SCS Runoff	102.48	2	724	321,673	------	------	------	Basin 1 Off-Site Post-Developed
6	SCS Runoff	154.03	2	722	431,732	------	------	------	Basin 1 On-Site Post-Developed
7	Combine	253.66	2	724	753,405	5, 6	------	------	Basin 1 Combined
8	Reservoir	114.17	2	736	748,250	7	635.96	316,313	Pond 1
9	SCS Runoff	79.07	2	722	222,877	------	------	------	Basin 2 Pre-Developed On-Site
10	SCS Runoff	124.36	2	720	325,025	------	------	------	Basin 2 Post-Developed On-Site
11	Reservoir	17.39	2	744	319,504	10	636.74	193,712	Pond 2
12	SCS Runoff	66.27	2	722	185,901	------	------	------	Basin 3 Pre-Developed On-Site
13	SCS Runoff	85.69	2	720	226,703	------	------	------	Basin 3 Post-Developed On-Site
14	Reservoir	41.65	2	730	224,681	13	657.99	100,230	Pond 3
15	SCS Runoff	30.57	2	722	85,699	------	------	------	Basin 4 Pre-Developed On-Site
16	SCS Runoff	52.21	2	720	136,459	------	------	------	Basin 4 Post-Developed On-Site
17	Reservoir	22.28	2	730	134,321	16	705.97	70,373	Pond 4

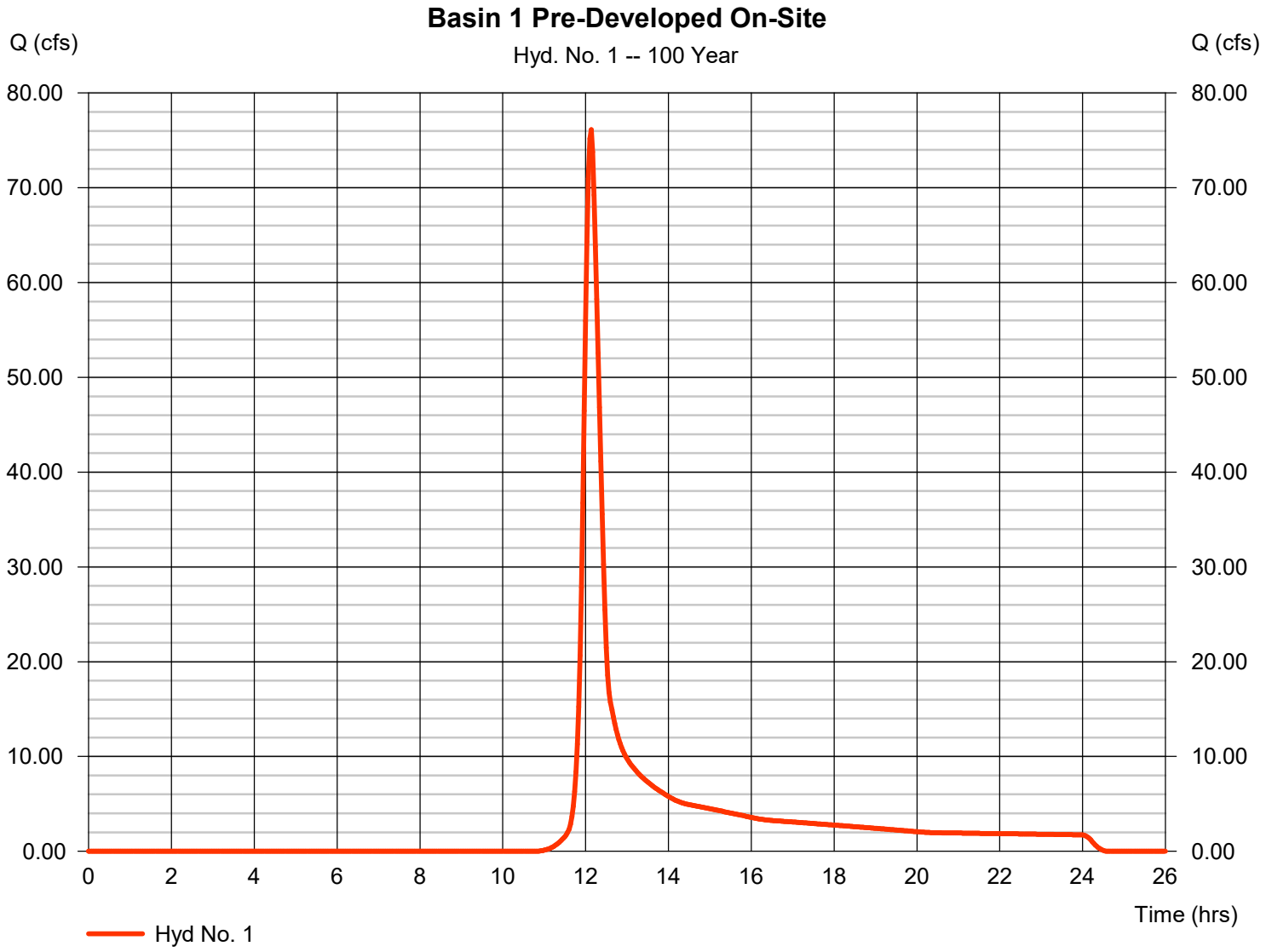
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 1

Basin 1 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 76.12 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 277,596 cuft
Drainage area	= 40.220 ac	Curve number	= 62
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 22.40 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



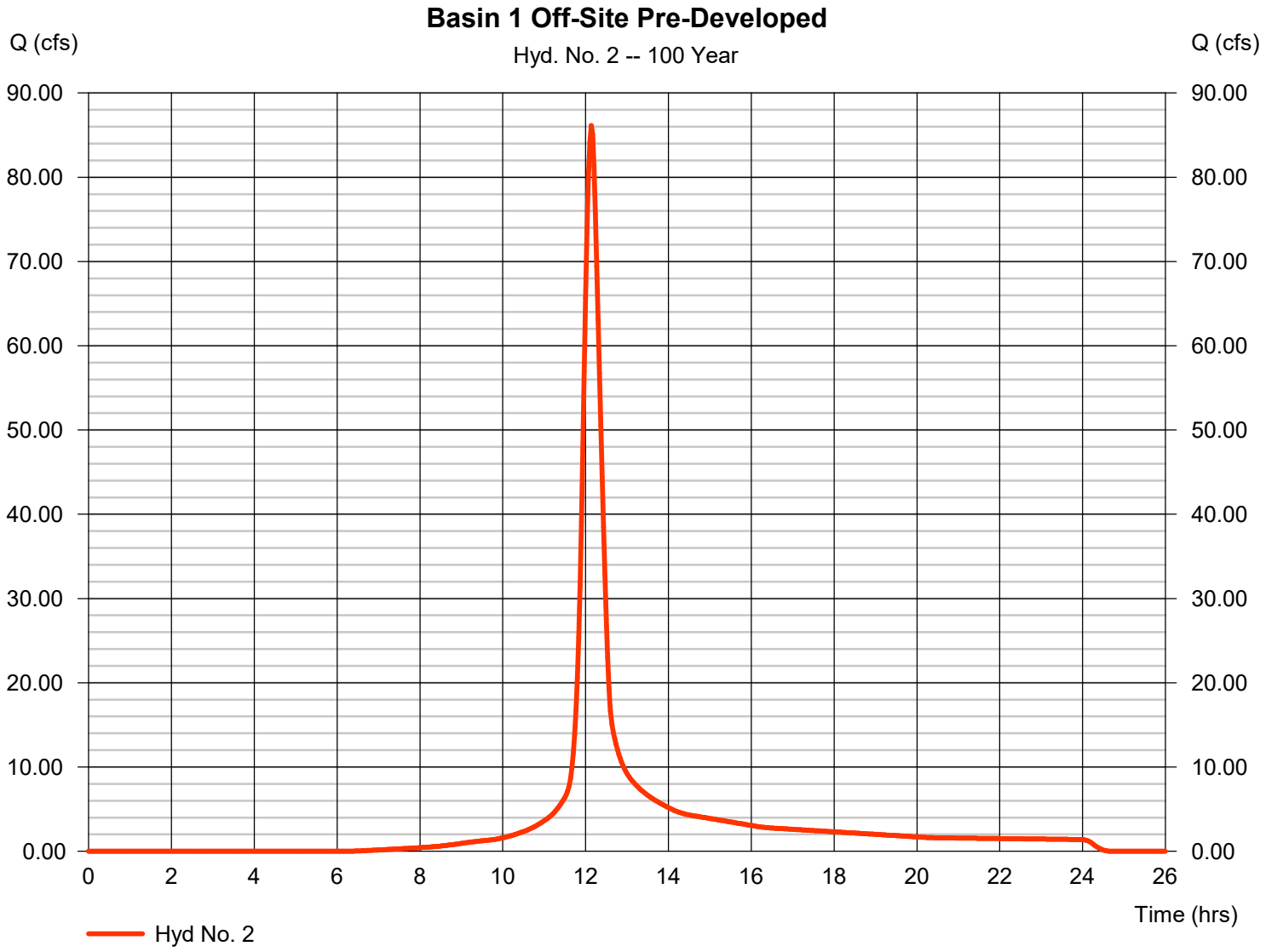
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 2

Basin 1 Off-Site Pre-Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 86.13 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 316,647 cuft
Drainage area	= 24.450 ac	Curve number	= 81.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 23.50 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



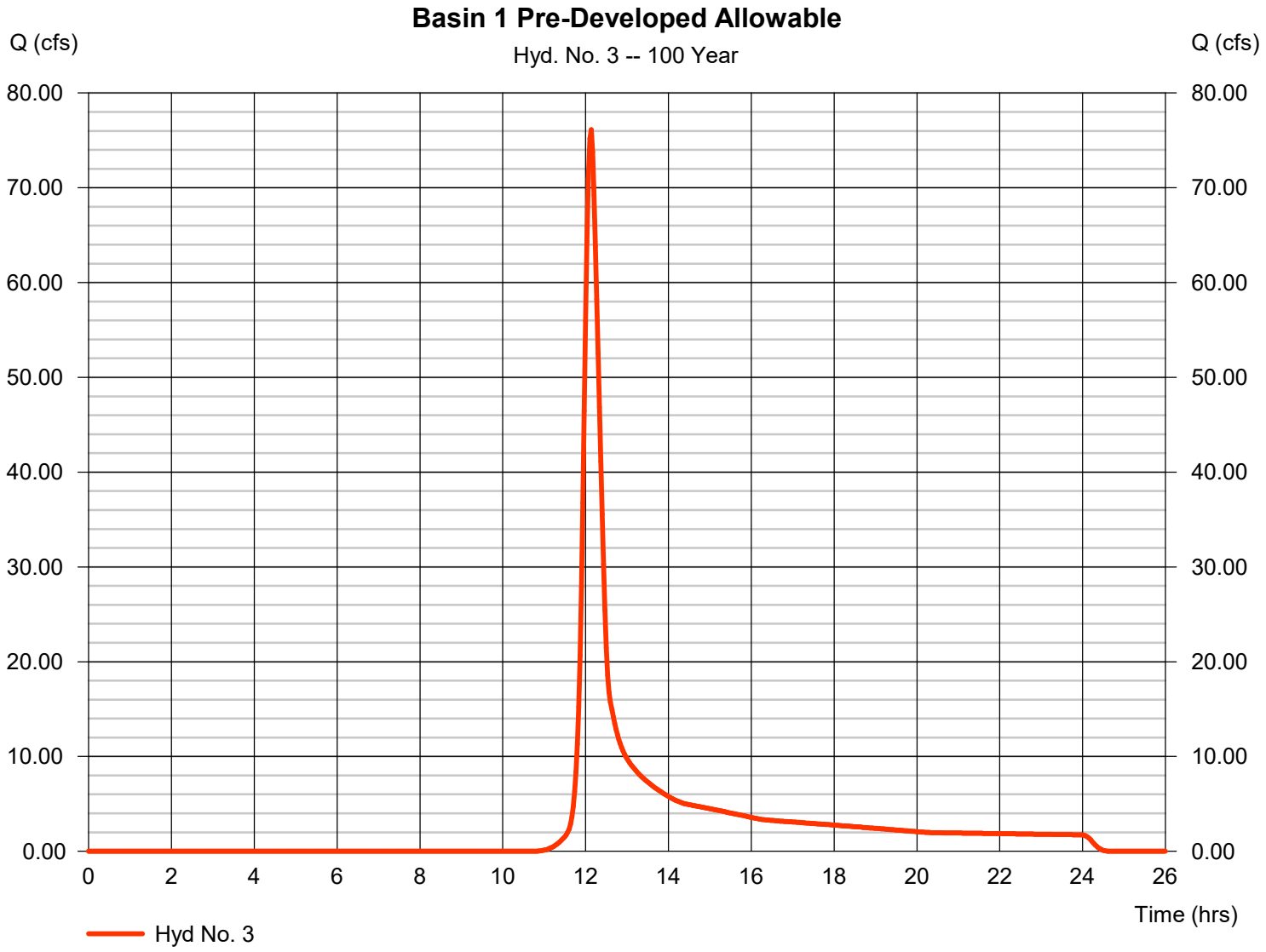
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 3

Basin 1 Pre-Developed Allowable

Hydrograph type	= Manual	Peak discharge	= 76.12 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 277,608 cuft

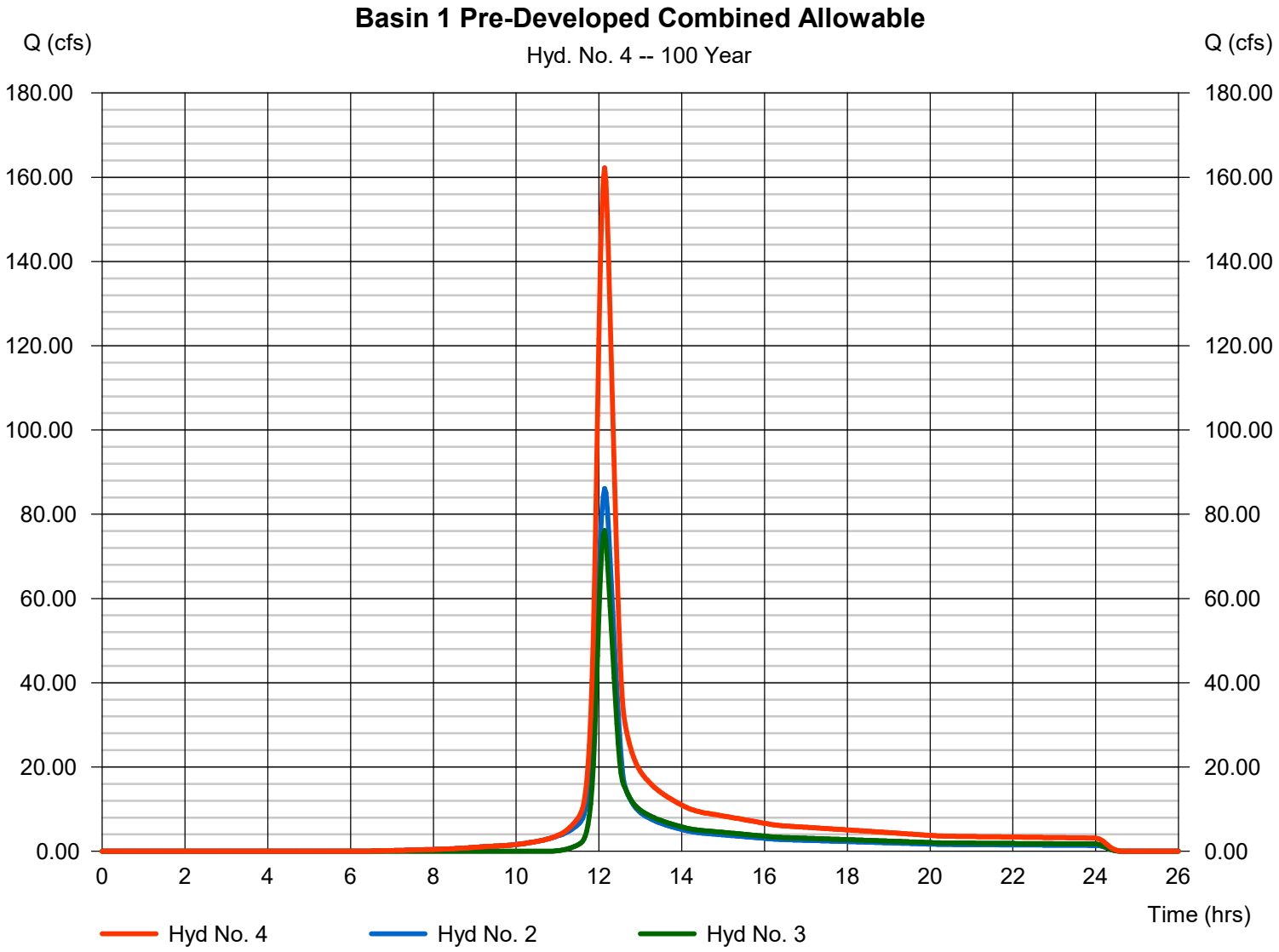


Hydrograph Report

Hyd. No. 4

Basin 1 Pre-Developed Combined Allowable

Hydrograph type	= Combine	Peak discharge	= 162.25 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.13 hrs
Time interval	= 2 min	Hyd. volume	= 594,255 cuft
Inflow hyds.	= 2, 3	Contrib. drain. area	= 24.450 ac



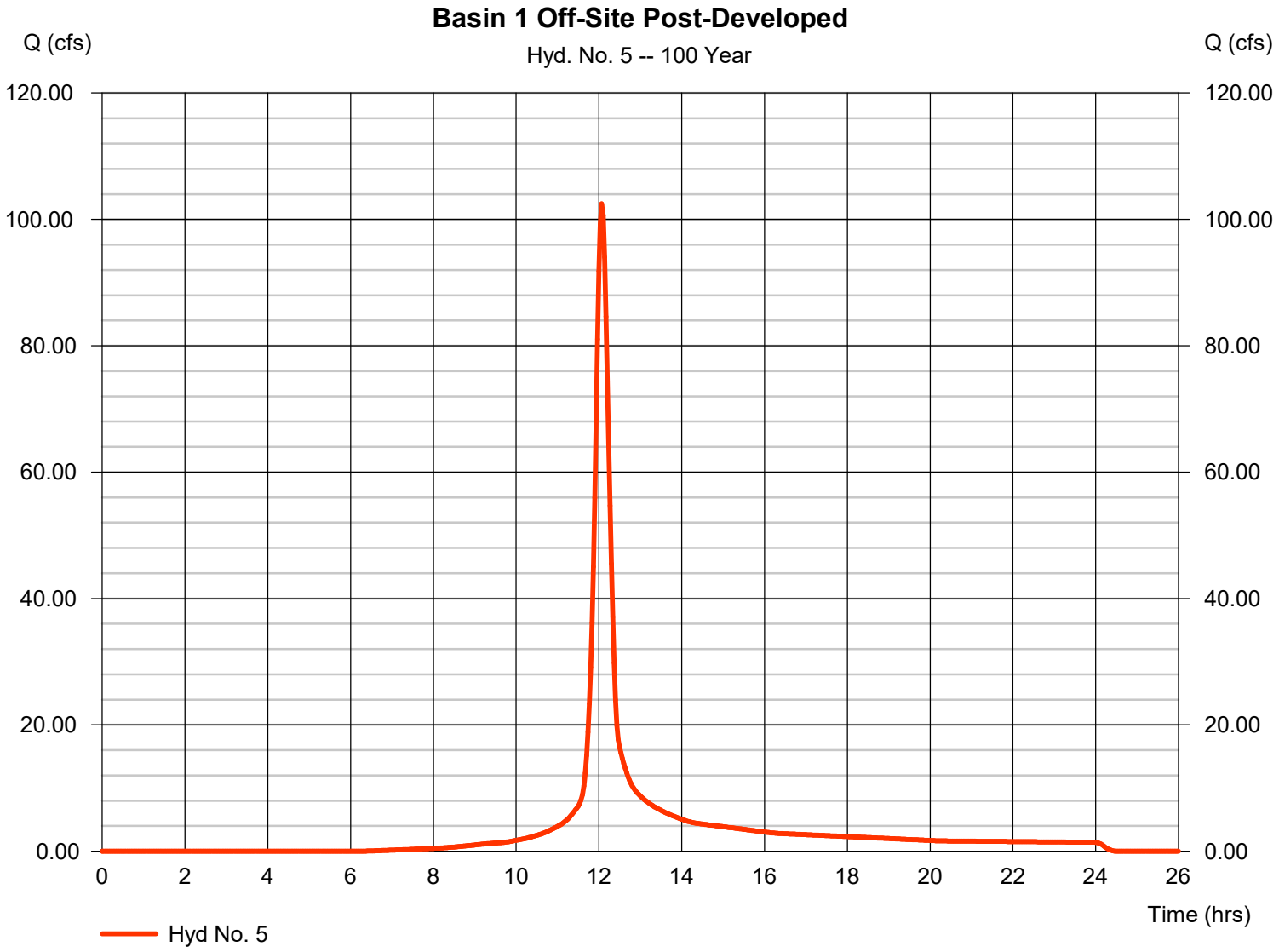
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 5

Basin 1 Off-Site Post-Developed

Hydrograph type	= SCS Runoff	Peak discharge	= 102.48 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 321,673 cuft
Drainage area	= 24.450 ac	Curve number	= 81.4
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 20.00 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



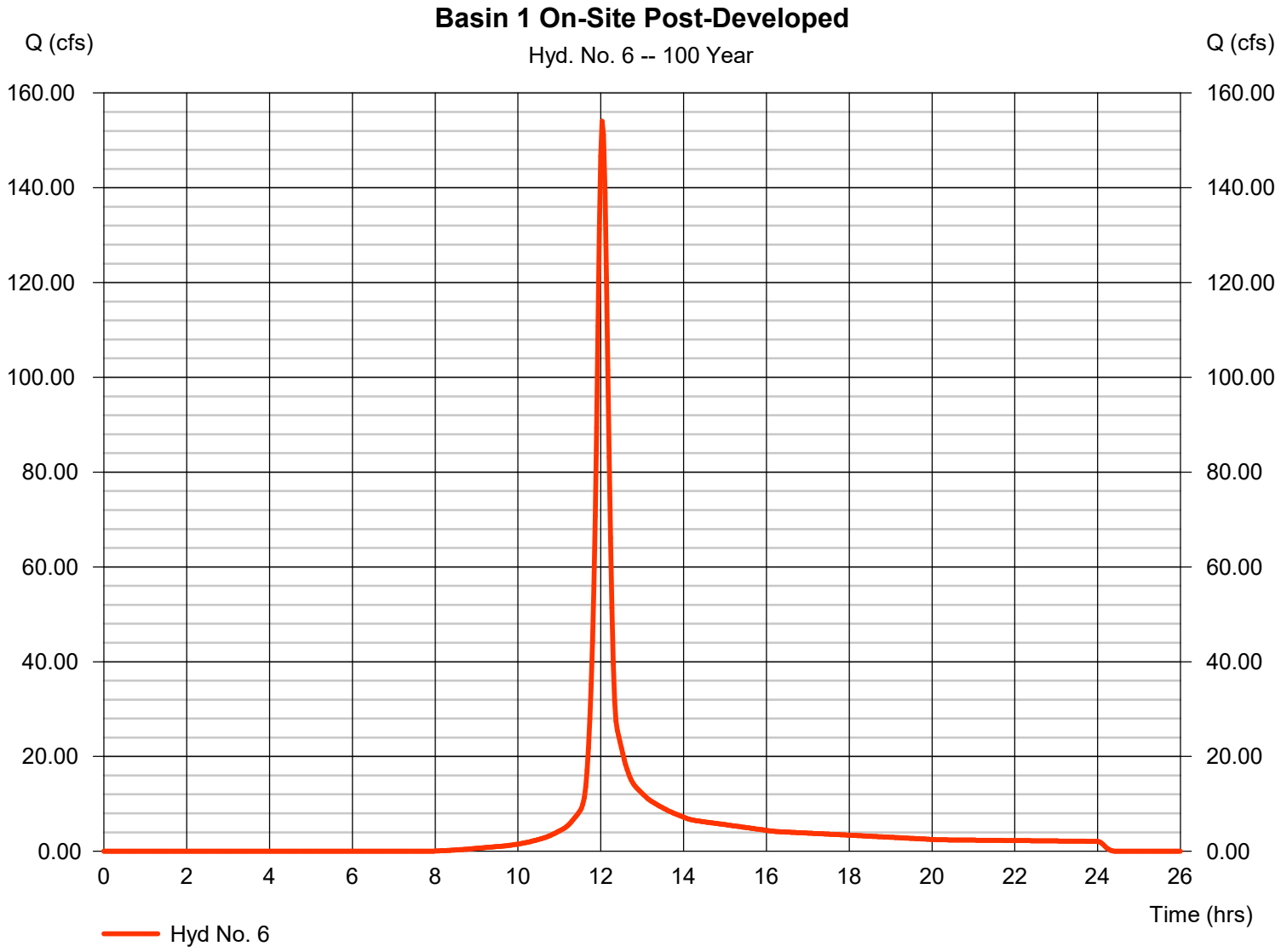
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 6

Basin 1 On-Site Post-Developed

Hydrograph type	=	SCS Runoff	Peak discharge	=	154.03 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.03 hrs
Time interval	=	2 min	Hyd. volume	=	431,732 cuft
Drainage area	=	39.750 ac	Curve number	=	75.7
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	13.50 min
Total precip.	=	5.67 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



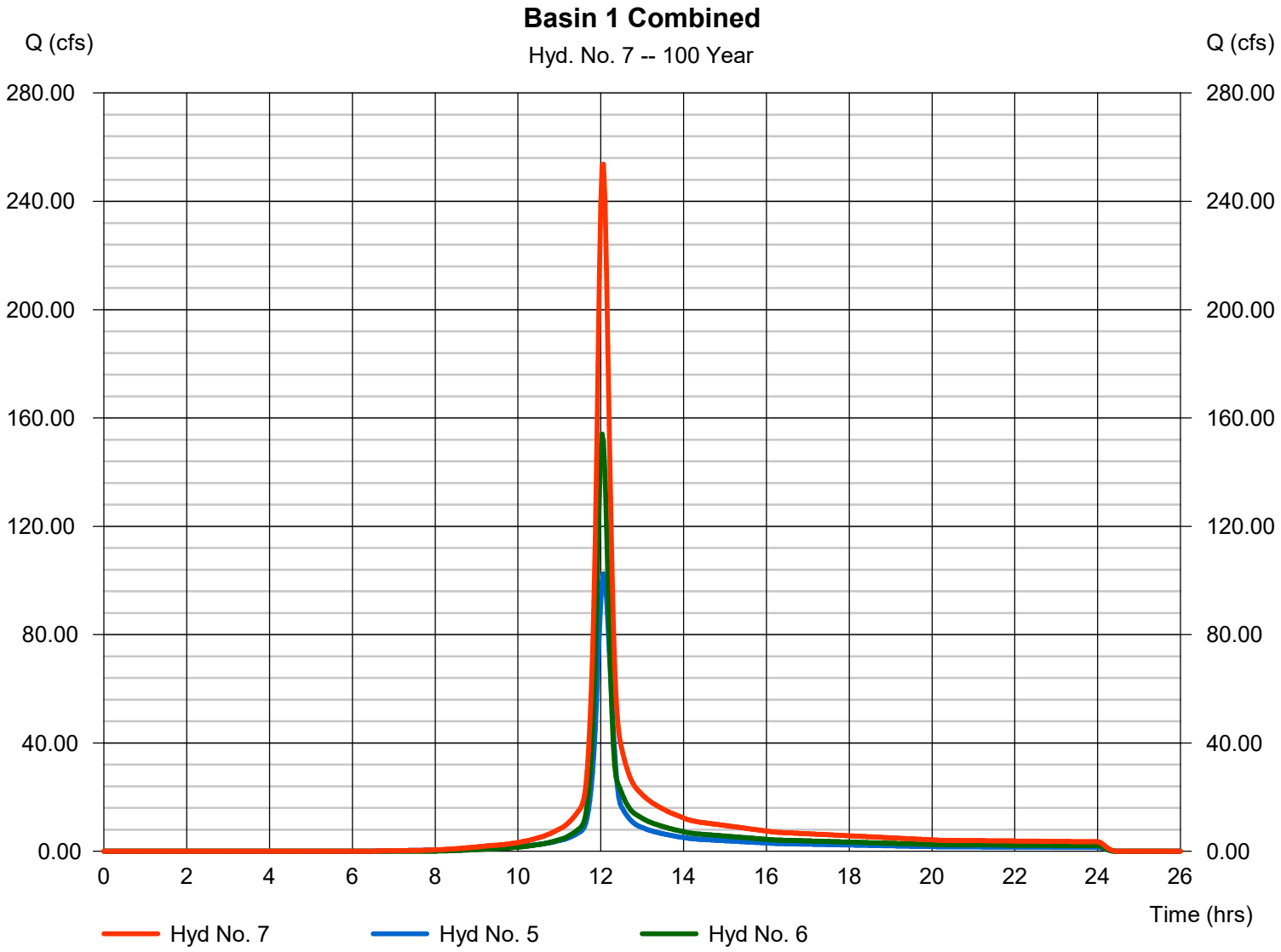
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 7

Basin 1 Combined

Hydrograph type	= Combine	Peak discharge	= 253.66 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.07 hrs
Time interval	= 2 min	Hyd. volume	= 753,405 cuft
Inflow hyds.	= 5, 6	Contrib. drain. area	= 64.200 ac



Hydrograph Report

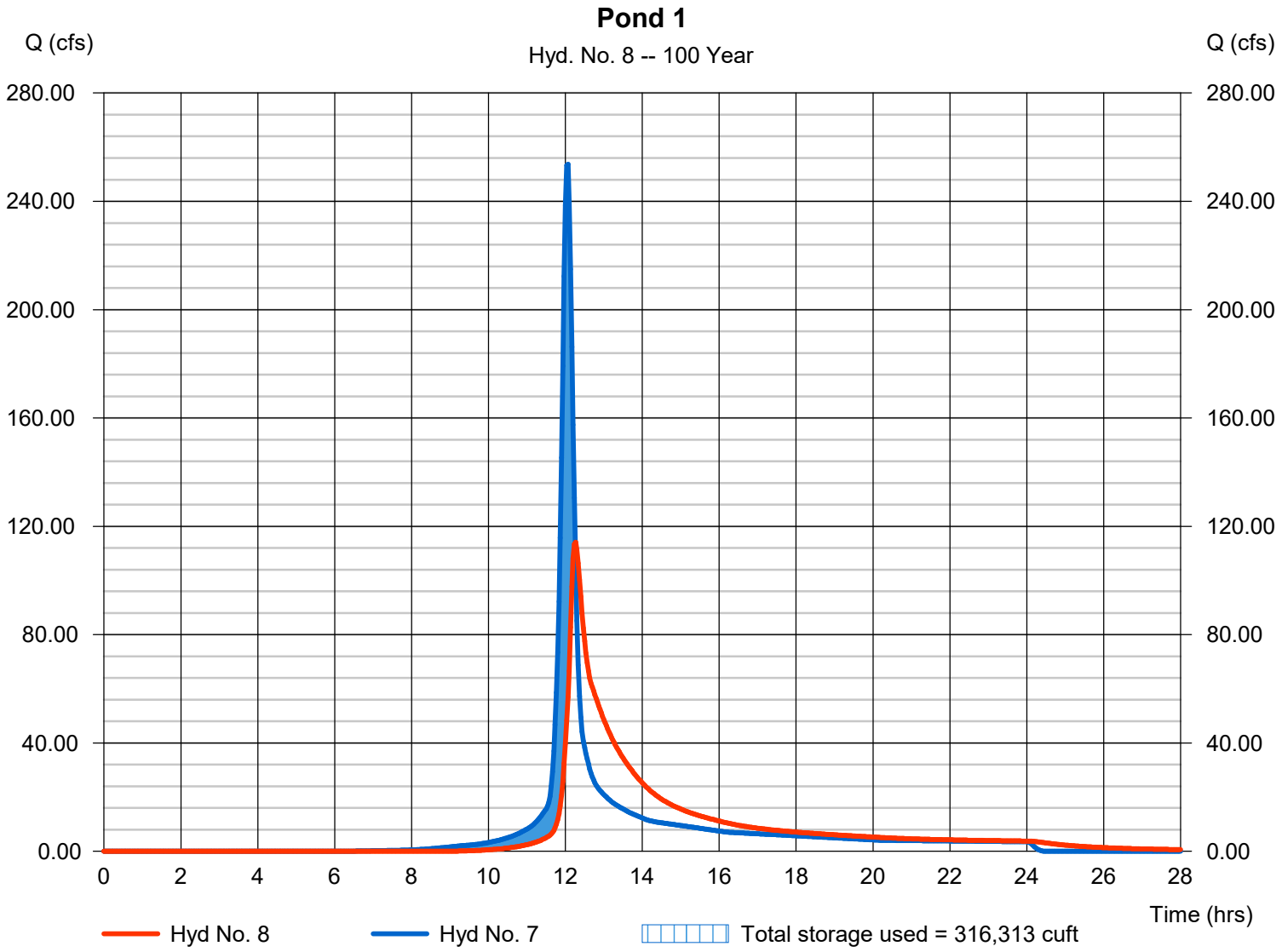
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 8

Pond 1

Hydrograph type	= Reservoir	Peak discharge	= 114.17 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.27 hrs
Time interval	= 2 min	Hyd. volume	= 748,250 cuft
Inflow hyd. No.	= 7 - Basin 1 Combined	Max. Elevation	= 635.96 ft
Reservoir name	= Pond 1	Max. Storage	= 316,313 cuft

Storage Indication method used. Wet pond routing start elevation = 631.80 ft.



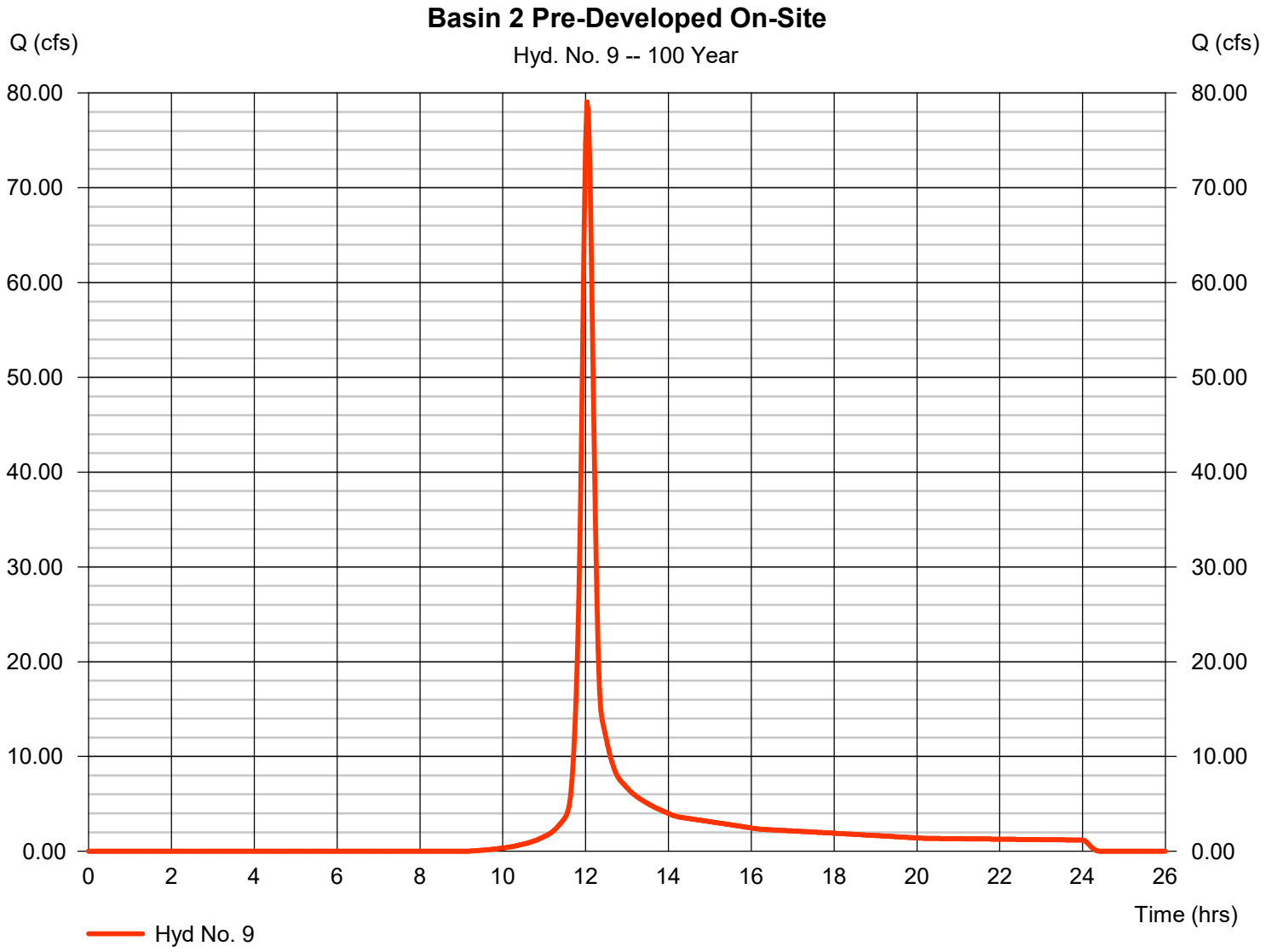
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 9

Basin 2 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 79.07 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 222,877 cuft
Drainage area	= 24.310 ac	Curve number	= 70.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 14.40 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



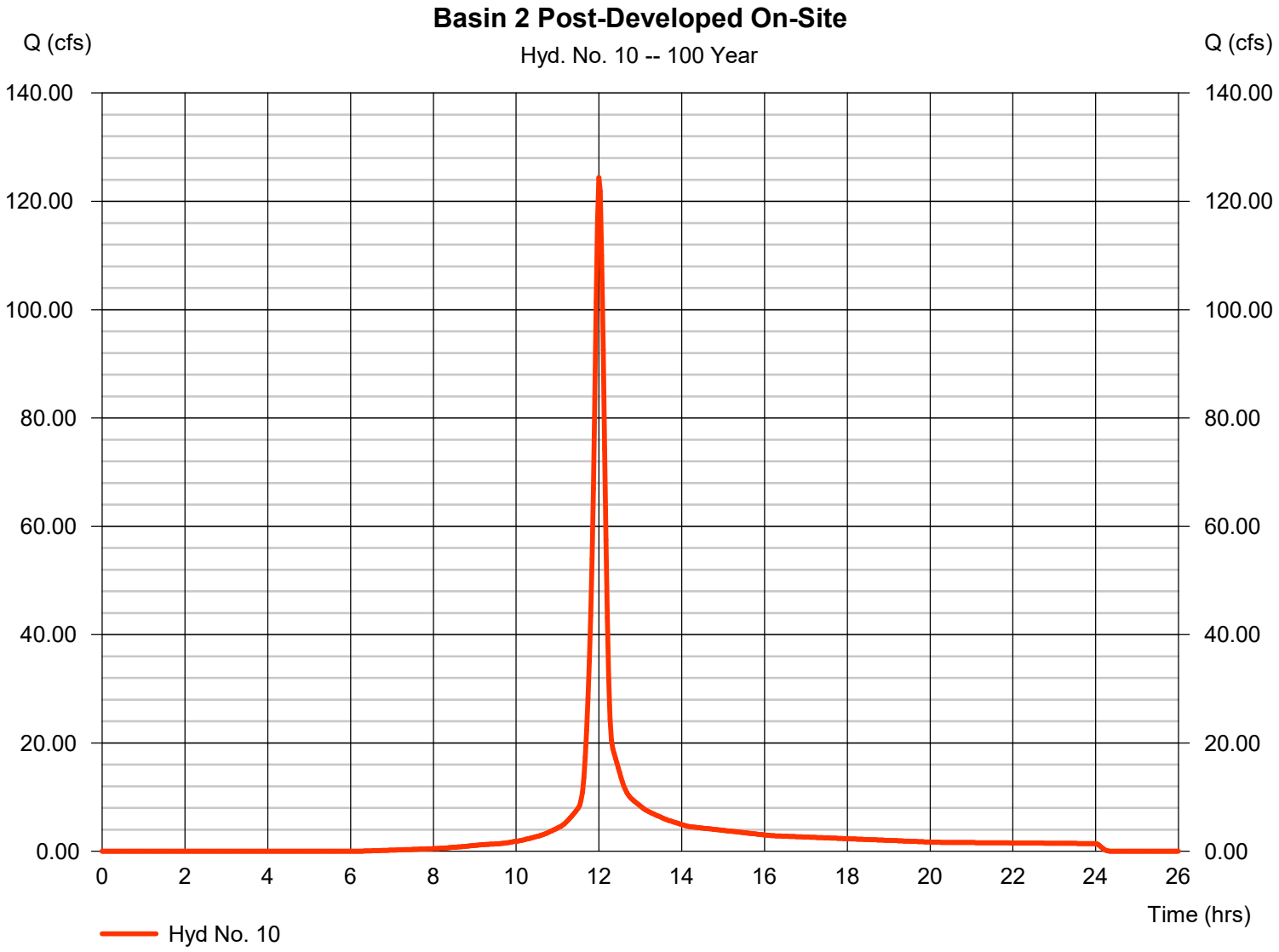
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 10

Basin 2 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 124.36 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 325,025 cuft
Drainage area	= 23.890 ac	Curve number	= 81.5
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

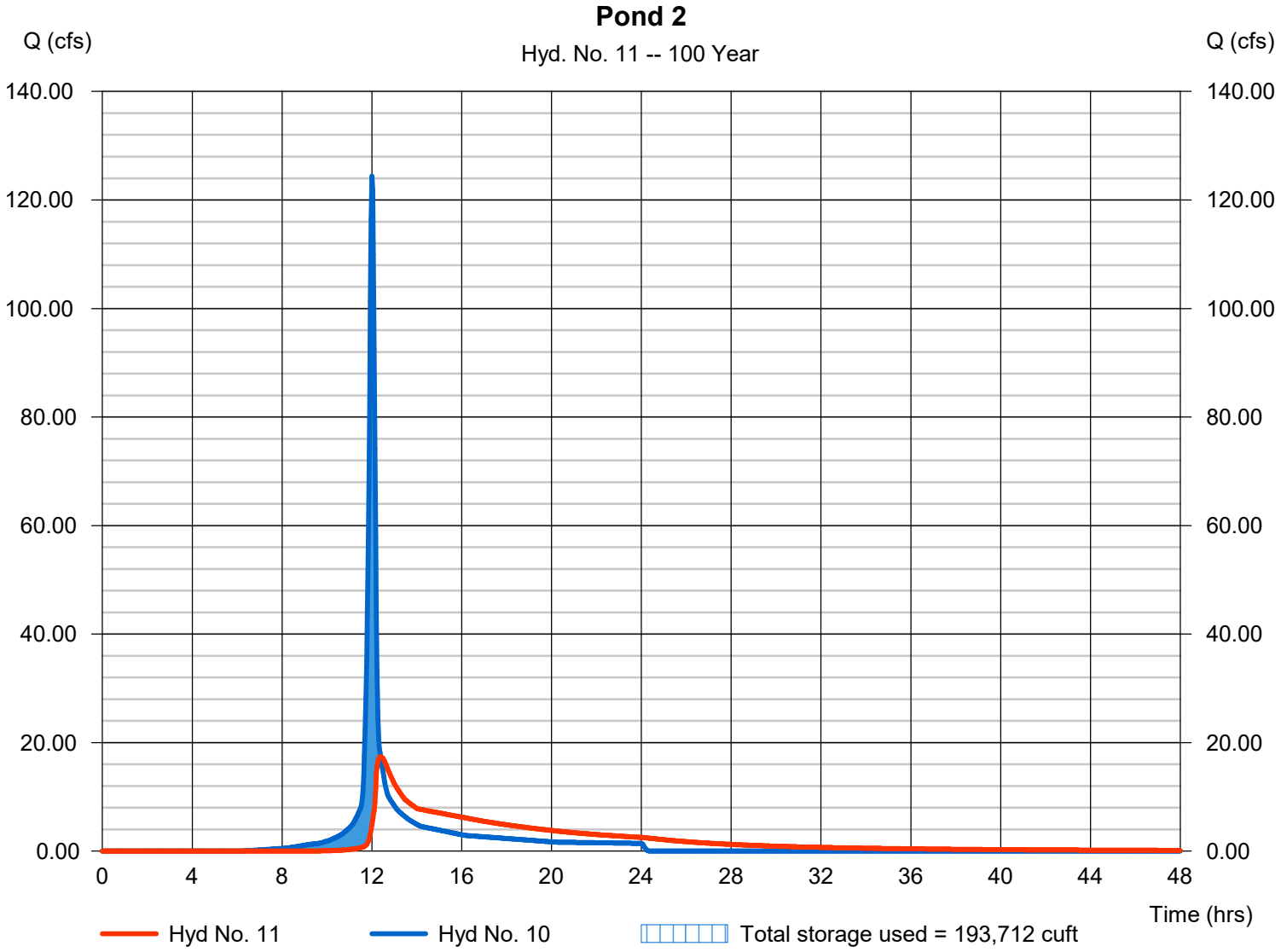
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 11

Pond 2

Hydrograph type	=	Reservoir	Peak discharge	=	17.39 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.40 hrs
Time interval	=	2 min	Hyd. volume	=	319,504 cuft
Inflow hyd. No.	=	10 - Basin 2 Post-Developed On-Site	Max. Elevation	=	636.74 ft
Reservoir name	=	Pond 2	Max. Storage	=	193,712 cuft

Storage Indication method used. Wet pond routing start elevation = 633.50 ft.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 12

Basin 3 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 66.27 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 185,901 cuft
Drainage area	= 16.160 ac	Curve number	= 77.6
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.30 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



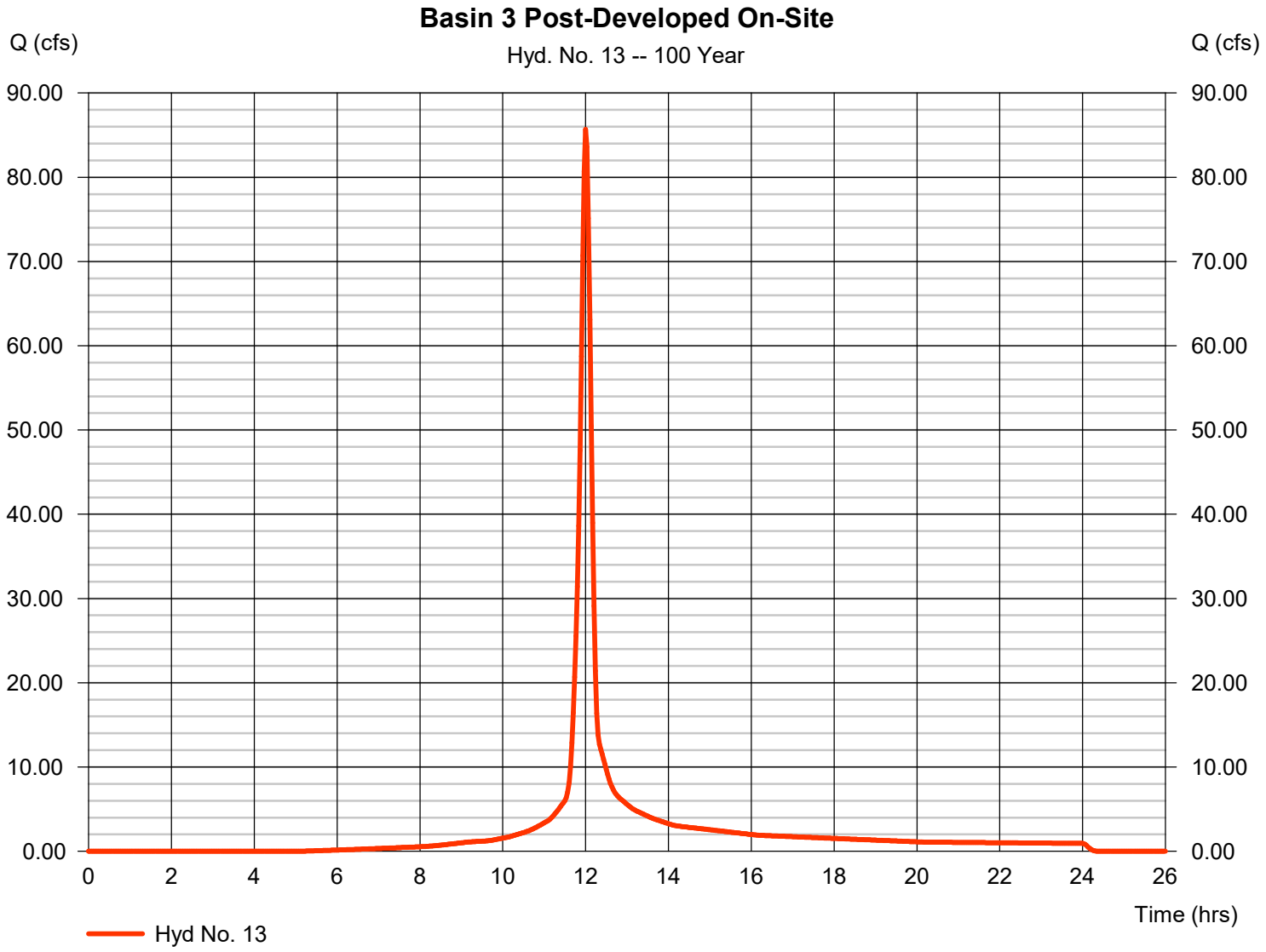
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 13

Basin 3 Post-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 85.69 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.00 hrs
Time interval	= 2 min	Hyd. volume	= 226,703 cuft
Drainage area	= 15.170 ac	Curve number	= 85
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 10.00 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

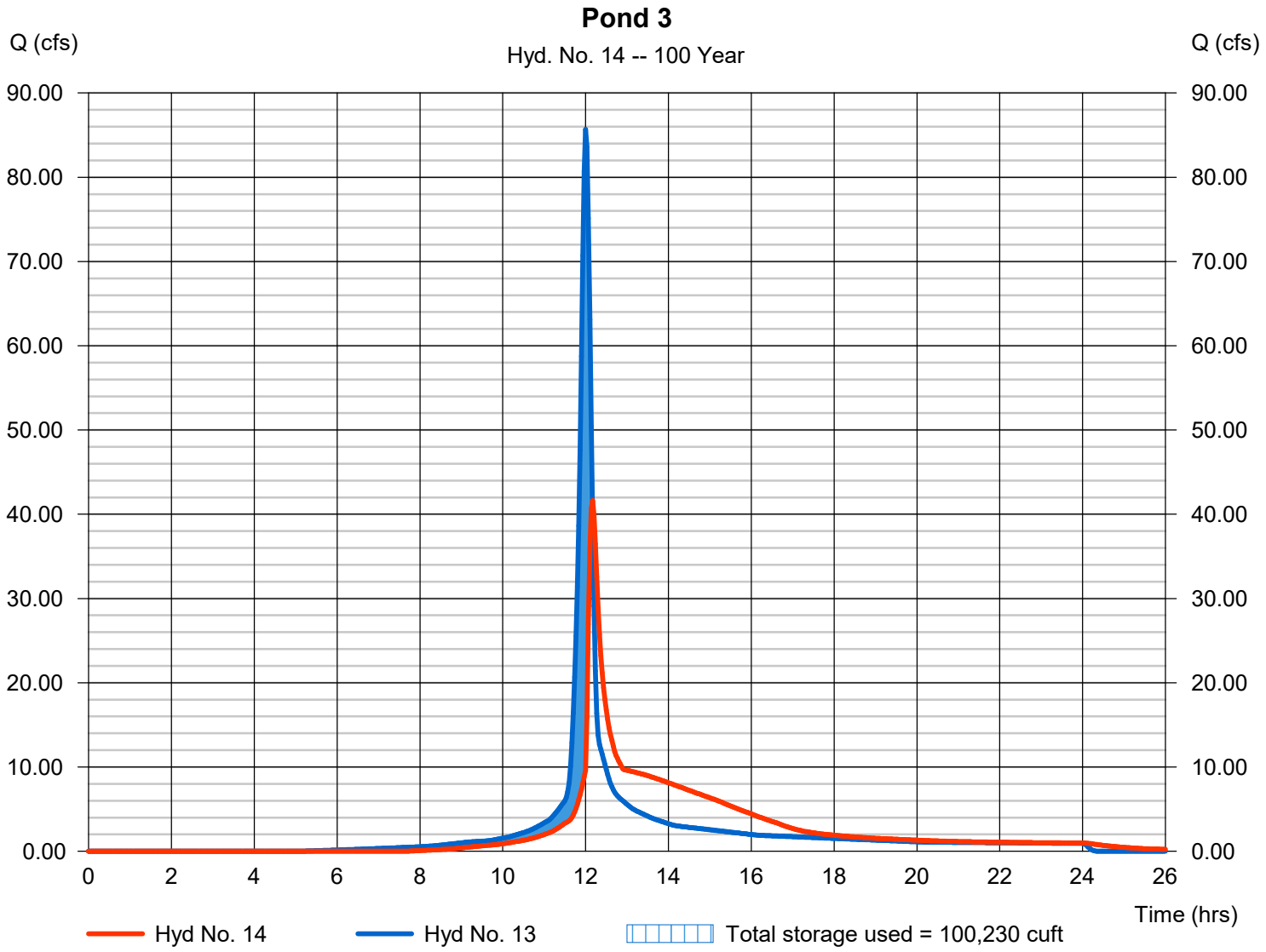
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 14

Pond 3

Hydrograph type	=	Reservoir	Peak discharge	=	41.65 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.17 hrs
Time interval	=	2 min	Hyd. volume	=	224,681 cuft
Inflow hyd. No.	=	13 - Basin 3 Post-Developed On-Site	Max. Elevation	=	657.99 ft
Reservoir name	=	Pond 3	Max. Storage	=	100,230 cuft

Storage Indication method used. Wet pond routing start elevation = 654.80 ft.



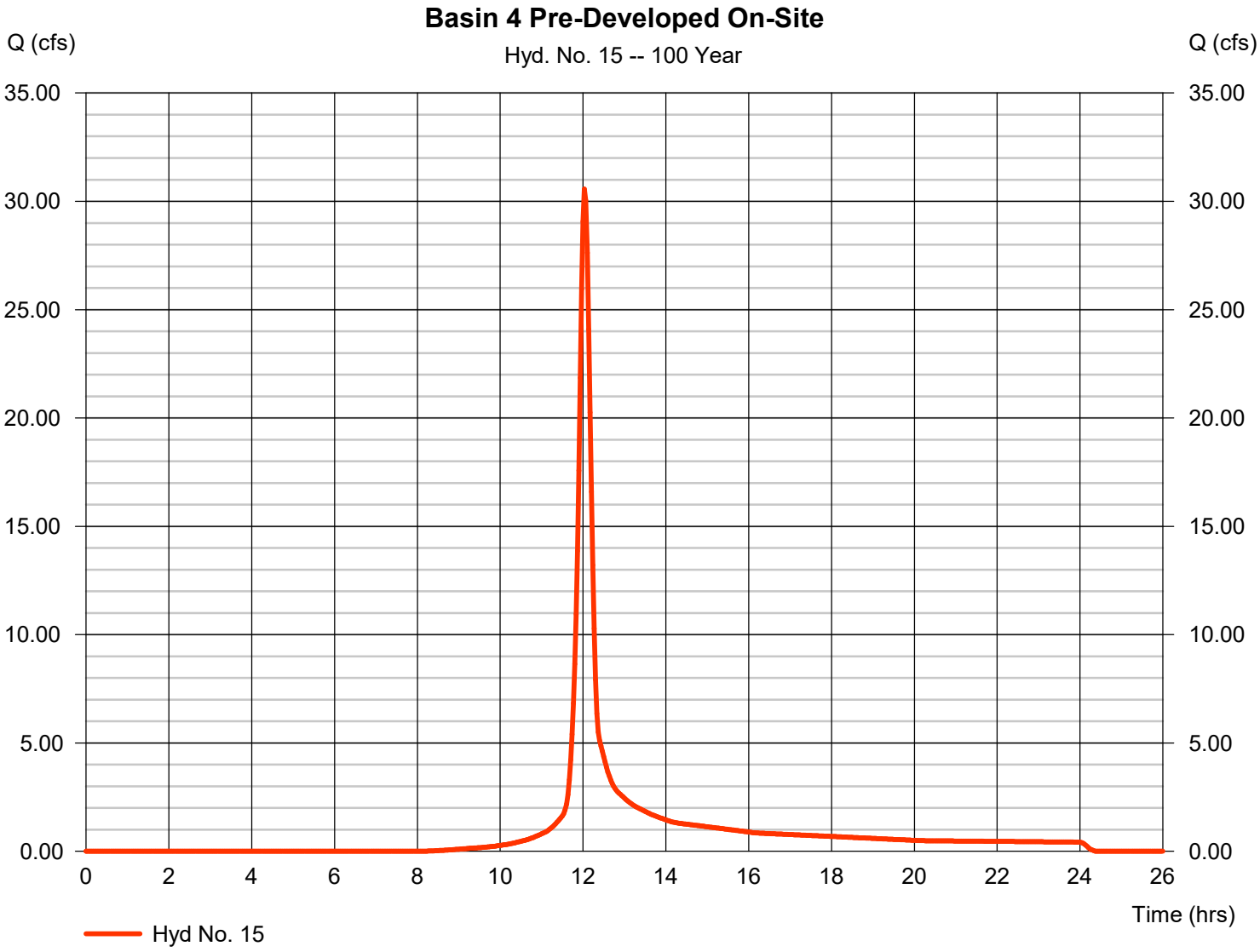
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 15

Basin 4 Pre-Developed On-Site

Hydrograph type	= SCS Runoff	Peak discharge	= 30.57 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.03 hrs
Time interval	= 2 min	Hyd. volume	= 85,699 cuft
Drainage area	= 8.140 ac	Curve number	= 74.7
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.20 min
Total precip.	= 5.67 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



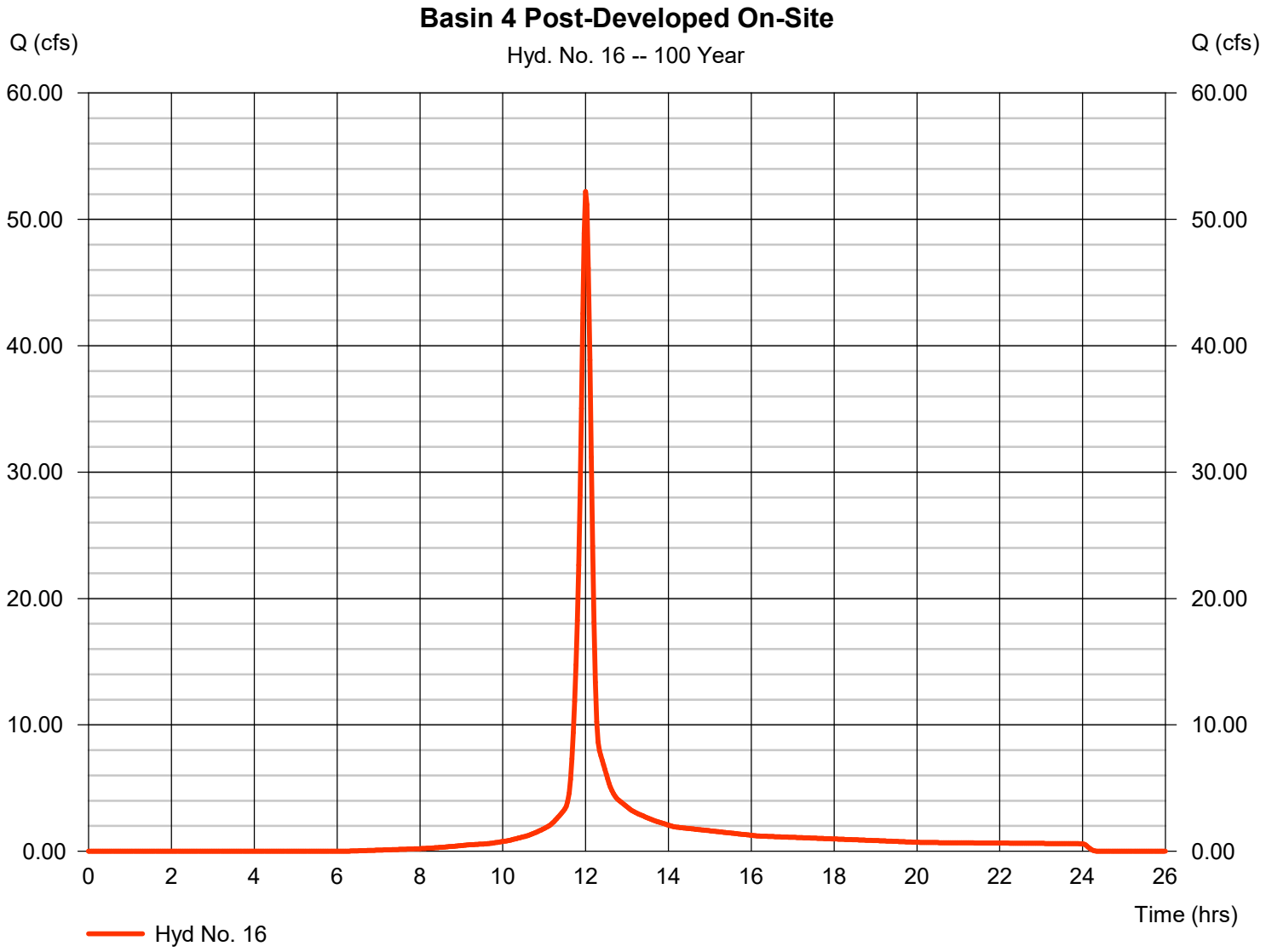
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 16

Basin 4 Post-Developed On-Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	52.21 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	136,459 cuft
Drainage area	=	10.030 ac	Curve number	=	81.5
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	10.00 min
Total precip.	=	5.67 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

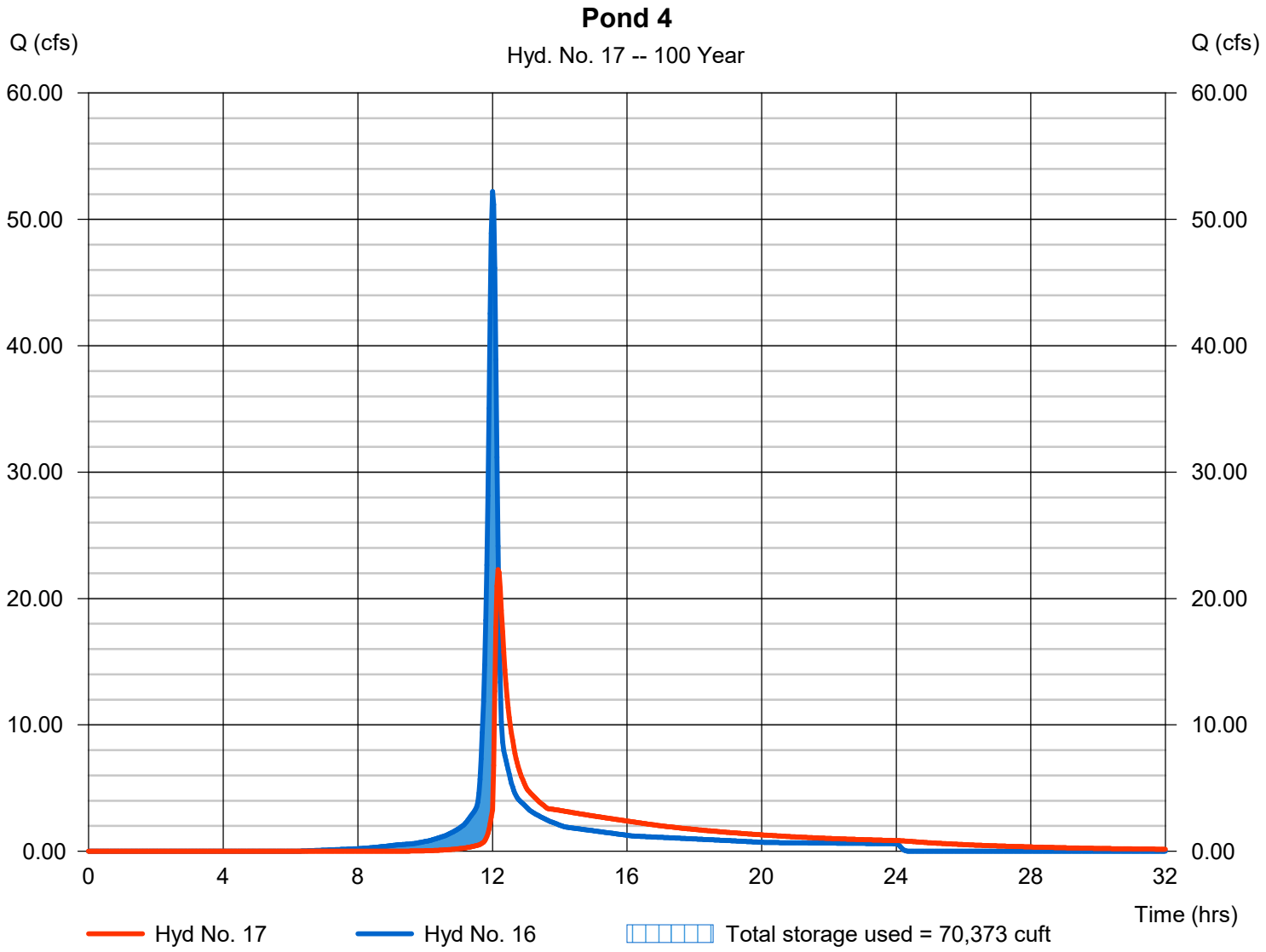
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Friday, 09 / 5 / 2025

Hyd. No. 17

Pond 4

Hydrograph type	=	Reservoir	Peak discharge	=	22.28 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.17 hrs
Time interval	=	2 min	Hyd. volume	=	134,321 cuft
Inflow hyd. No.	=	16 - Basin 4 Post-Developed On-Site	Max. Elevation	=	705.97 ft
Reservoir name	=	Pond 4	Max. Storage	=	70,373 cuft

Storage Indication method used. Wet pond routing start elevation = 703.50 ft.



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	80.0000	14.0000	1.0000	--------
2	106.0000	17.0000	1.0000	--------
3	118.0000	18.0000	1.0000	--------
5	131.0010	19.0000	1.0000	--------
10	170.0000	23.0000	1.0000	--------
25	230.0010	30.0000	1.0000	--------
50	250.0010	27.0000	1.0000	--------
100	300.0020	31.0000	1.0000	--------

File name: Butler County.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	4.21	3.33	2.76	2.35	2.05	1.82	1.63	1.48	1.36	1.25	1.16	1.08
2	4.82	3.93	3.31	2.86	2.52	2.26	2.04	1.86	1.71	1.58	1.47	1.38
3	5.13	4.21	3.58	3.11	2.74	2.46	2.23	2.03	1.87	1.74	1.62	1.51
5	5.46	4.52	3.85	3.36	2.98	2.67	2.43	2.22	2.05	1.90	1.77	1.66
10	6.07	5.15	4.47	3.95	3.54	3.21	2.93	2.70	2.50	2.33	2.18	2.05
25	6.57	5.75	5.11	4.60	4.18	3.83	3.54	3.29	3.07	2.88	2.71	2.56
50	7.81	6.76	5.95	5.32	4.81	4.39	4.03	3.73	3.47	3.25	3.05	2.87
100	8.33	7.32	6.52	5.88	5.36	4.92	4.55	4.23	3.95	3.70	3.49	3.30

Tc = time in minutes. Values may exceed 60.

Precip. file name: K:\OLD-R\Mason\Hydraflow Rainfall Data\Butler County.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.20	2.90	0.00	3.60	4.15	4.85	5.20	5.67
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Custom	0.00	1.75	0.00	2.80	3.90	5.25	6.00	7.10

200600024249
Filed for Record in
BUTLER COUNTY, OHIO
DANNY N CRANK
04-19-2006 At 11:06:23 am.
RESTRICTION 180.00
OR Book 7728 Page 617 - 637

BK: 7728 PG: 617

DECLARATION OF COVENANTS, CONDITIONS RESTRICTIONS AND RESERVATION OF EASEMENTS FOR TALL OAKS HOMEOWNERS ASSOCIATION

Declarant, Welsh Development Company, an Ohio corporation, is the owner of certain real estate in City of Monroe, Ohio, described in Exhibit "A", attached hereto and incorporated herein (hereinafter referred to as "Property").

Declarant hereby declares that the Property shall be held, sold and conveyed subject to the covenants, conditions, restrictions and reservation of easements herein, which are for the purpose of protecting the value and desirability of and which shall run with the Property submitted hereunder or which may subsequently be added, and shall be binding on all parties having any right, title or interest in the Property, their heirs, successors and assigns, and shall inure to the benefit of each owner thereof.

200600024249
Filed for Record in
BUTLER COUNTY, OHIO
DANNY N CRANK
04-19-2006 At 11:06:23 am.
DECLARATION 180.00
OR Book 7728 Page 617 - 637

ARTICLE I

Definitions

1.1 **Additional Land.** "Additional Land" means property that may adjoin **Tall Oaks** that the Declarant may develop and add to the subdivision in the future, which may be made subject to this Declaration pursuant to Article XII.

1.2 **Allocated Interests.** "Allocated Interests" means the Common Expense Liability and votes in the Association as set forth in Article III.

1.3 **Assessments.** "Assessments" means those charges upon the Lots established by Article VI of this Declaration.

1.4 **Association.** "Association" means **Tall Oaks** Homeowners Association, an Ohio nonprofit corporation, its successors and assigns. Except as the context otherwise requires "Association" shall mean the Board of Trustees acting on behalf of the Association.

1.5 **Board.** "Board" shall mean the Board of Trustees of the Association.

1.6 **Builder.** "Builder" shall mean any Lot Owner who purchases a Lot directly from the Declarant for purposes of constructing a single family residence on said Lot.

1.7 **Common Elements.** "Common Elements" shall mean any real estate owned or leased by the Association, including easements in favor of the Association.

1.8 **Common Expense Liability.** "Common Expense Liability" means the liability for Common Expenses allocated to each Lot pursuant to Article III, of this Declaration.

1.9 **Common Expenses.** "Common Expenses" means expenditures made by, or financial liabilities of, the Association, together with any allocations to reserves.

1.10 **Declarant.** "Declarant" means Welsh Development Company, Inc., it successors and assigns.

TRANSFER NOT NECESSARY
KAY ROGERS
BY 4-19-06 DEPT.
AUDITOR, BUTLER CO., OHIO

1.11 **Declaration.** "Declaration" means this Declaration of Covenants, Conditions, Restrictions and Reservation of Easements for **Tall Oaks** Homeowners Association, including any amendments hereto.

1.12 **Dwelling Unit**. "Dwelling Unit" means a building situated on the Properties designed and intended for use and occupancy as a single- family residence.

1.13 **Lot.** "Lot" means the physical portion of the Property designated for separate ownership or occupancy, the boundaries of which are described pursuant to Article II, Section 2.1.

1.14 **Member.** "Member" means any person or entity entitled to membership in the Association as provided herein.

1.15 **Occupant**. "Occupant" means any person in possession of a Lot, or Dwelling Unit whether or not such possession is lawful and shall include but not limited to, an Owner's family members, guests, invitees, tenants and lessees.

1.16 **Owner.** "Owner" means the Declarant or other person or entity who owns a Lot, but does not include a person or entity having an interest in a Lot solely as security for an obligation.

1.17 **Property**. "Property" or "Properties" means the real estate described in Exhibit "A" attached hereto and any other property which may be made subject to the terms of this Declaration, together with any improvements made thereon.

1.18 **Survey Plat**. "Survey Plat" means the plat of **Tall Oaks,** Plat Envelope 3954 , pages A – D , of the **Butler County**, Ohio Records; and the plat for any additional land made subject to the terms and conditions of this Declaration.

1.19 **Turnover Date.** "Turnover Date" shall be the date that 95% of the Lots in all Sections of **Emerald Lake** Subdivision have been sold by the Declarant.

ARTICLE II

BK: 7728 PG: 618

Lots

2.1 **Description of Lot Boundaries**. The Boundaries of the Lots shall be those as set forth on the Final Plat recorded with the **Butler County Recorder**.

ARTICLE III

Allocation of Allocated Interests

3.1 **Common Expense Liability.** The allocation of Allocated Interests for Common Expense Liability shall be determined in accordance with the allocation of the various assessments as set forth in Article VI, Section 6.8.

3.2 **Votes in the Association**. The allocation of Allocated Interests for voting purposes shall be one vote per Lot, however, the Declarant shall have 10 votes per lot owned.

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BK: 7728 PG: 618

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5.3_ **Powers of the Association.** Subject to the Special Declarant Rights hereinafter set forth, the Association may:

5.3.1 adopt and amend a Code of Regulations for the government of the Association, the conduct of its affairs and the management of the Property;

5.3.2 adopt rules and regulations for the use and enjoyment of the Common Elements and to enforce violations of the rules and regulation and the provisions and restrictions of the Declaration as against the Owners and Occupants;

5.3.3 adopt and amend budgets for revenues, expenditures and reserves and levy and collect Assessments from Owners;

5.3.4 hire and discharge managing agents and other employees, agents and independent contractors;

5.3.5 institute, defend or intervene in litigation or administrative proceedings in its own name on behalf of itself or two or more Owners on matters affecting the community;

5.3.6 make contracts and incur liabilities; specifically to include agreements to maintain landscaping and trees in the right-of-way.

5.3.7 regulate the use, maintenance, repair, replacement and modification of the Common Elements for which the Association has maintenance responsibility and other rights as set forth herein;

5.3.8 cause additional improvements to be made as part of the Common Elements except that this power shall be limited to improvement required solely for surface water management, landscaping, street lighting, signage and/or recreational purposes;

5.3.9 acquire, hold, encumber and convey in its own name any right, title or interest to real estate or personal property;

5.3.10 grant easements, liens, licenses and concessions through or over the Common Elements;

5.3.11 impose and receive any payments, fees or charges for the use, rental or operation of the Common Elements and for services provided to Owners;

5.3.12 impose charges for late payments of Assessments and after notice and an opportunity to be heard, levy reasonable fines for violations of the Declarations, Code of Regulations, Rules and Regulations of the Association;

5.3.13 impose reasonable charges for the preparation and recordation of amendments to the Declaration or for statements of unpaid Assessments;

5.3.14 provide for indemnification of its officers and board of trustees and maintain directors' and officers' liability insurance;

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5.3.13 impose reasonable charges for the preparation and recordation of amendments to the Declaration or for statements of unpaid Assessments;

5.3.14 provide for indemnification of its officers and board of trustees and maintain directors' and officers' liability insurance;

subject to the Board's supervision, certain powers granted to the Board by this Declaration. The Declarant, or an affiliate of the Declarant, may be employed as a managing agent or manager.

No management contract may have a term in excess of three (3) years and must permit termination by either party without cause and without termination fee on ninety - (90) days or less written notice.

ARTICLE VI

Assessments

6.1_ **Establishment of Assessments** There are hereby established for the benefit of the association, its successors or assigns, as a charge on each lot, certain assessments for common expenses and other expenses. Each Owner, by acceptance of a deed, covenants and agrees to pay such assessments, except the Declarant shall have no obligation to pay assessments unless the dwelling unit located upon any lot owned by the Declarant is occupied. In addition, any lot owned by a Builder shall not be subject to an assessment until one year after the transfer of the lot from the Declarant to the Builder. The annual general assessment is estimated to be $300.00 per lot for the first year for which assessments are charged. In addition, each lot shall be assessed a one-time amentity fee of $500.00 to be paid to the Declarant.

6.2_ **Purpose of the Assessments**. The Assessments are established for the benefit and use of the Association and shall be used in covering the costs of its Common Expenses and for other such purposes as hereinafter set forth.

6.3_ **Annual General Assessment**. There is hereby established an Annual General Assessment for the purpose of the Common Expenses of the Association. The Common Expenses shall be, but not limited to, (1) operation, maintenance, repair and replacement as required by this Declaration; (2) the cost of any insurance required by this Declaration; (3) reasonable reserves for contingencies and replacement; and (4) administrative, accounting, legal and management fees; (5) all other costs and liabilities incurred by the Association in the exercise of its powers and duties pursuant to this Declaration. Notwithstanding the above, the Association shall not be required to establish any reasonable reserves for contingencies and replacement prior to the Turnover Date.

6.4_ **Individual Assessment**. The Association after approval by two-thirds (2/3) vote of all members of the Board shall have the right to assess an individual Lot for any of the following:

6.4.1 any costs incurred by the Association in the performance of any maintenance in accordance with Article VII, Section 7.4.

6.4.2 any costs incurred for maintenance or repair caused through the willful or negligent act of an Owner or Occupant or their family, tenants, guests or invitees, including attorney fees, court costs and other expenses incurred.

6.4.3 any costs associated with the enforcement of this Declaration or the Rules and Regulations of the Association, including, but not limited to attorneys fees, witness fees and costs, and court costs.

6.5_ **Special Assessments**. In addition to the other Assessments authorized herein, the Association may levy Special Assessments in any fiscal year. So long as the total amount of Special Assessments allocable to each Lot does not exceed One Hundred Twenty Percent (120%) of the Annual

subject to the Board's supervision, certain powers granted to the Board by this Declaration. The Declarant, or an affiliate of the Declarant, may be employed as a managing agent or manager.

No management contract may have a term in excess of three (3) years and must permit termination by either party without cause and without termination fee on ninety - (90) days or less written notice.

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6.4.3 any costs associated with the enforcement of this Declaration or the Rules and Regulations of the Association, including, but not limited to attorneys fees, witness fees and costs, and court costs.

6.5_ **Special Assessments**. In addition to the other Assessments authorized herein, the Association may levy Special Assessments in any fiscal year. So long as the total amount of Special Assessments allocable to each Lot does not exceed One Hundred Twenty Percent (120%) of the Annual

General Assessment for that fiscal year, the Board may impose the Special Assessment. Any Special Assessments which would cause the amount of Special Assessments allocable to any Lot to exceed this limitation shall be effective only if approved by a majority vote of the Members present and voting at a meeting duly called for such purpose. Special Assessments shall be paid as determined by the Board, and the Board may permit Special Assessments to be paid in installments extending beyond the fiscal year in which the Special Assessment is imposed.

6.6_ **Computation and Payment of Annual General Assessment**. The Annual General Assessment shall be computed and levied in accordance with the budget adopted by the Board pursuant to the Code of Regulations. This Assessment shall be effective as to each Lot on the first day of the Association's fiscal year subject to the limitations set forth in Section 6.1 above. With respect to Lots added during the fiscal year, this Assessment shall be prorated to the end of the Association's fiscal year. So long as there has been no default in payment of the Assessment, it shall be payable in annual installments due on the first day of each fiscal year. The Board shall have the power from time to time to adopt such billing, collection and payment procedures, charges and other payment time schedules as it deems appropriate.

6.7_ **Lien for Assessments**. The Association shall have a lien for any Assessment levied against a Lot, for fines imposed against an Owner or Occupant, and for interest, costs and reasonable attorney fees.

6.7.1 **Creation.** The lien for Assessments is created by this Declaration and shall be a charge and a continuing lien on each Lot, which shall run with the land. All persons or entities acquiring an interest in a Lot after the filing of this Declaration take such interest subject to the lien.

6.7.2 **Effective Dates.** The lien for the Common Expense Liability for each Lot as set forth in the Annual General Assessment shall be effective on the first day of the fiscal year of the Association. The lien for other Assessments shall be effective on the first day of the month following the notice of it levy on the Owners affected.

6.7.3 **Perfection.** Recording of this Declaration constitutes notice and perfection of the Lien.

6.7.4 **Notice of Lien**. The Association may file a notice of lien with the Recorder of Butler County, Ohio. Such notice shall not be required for the Association to enforce its lien.

6.7.5 **Priority of the Lien**. The lien created by this Section shall be prior to all liens and encumbrances recorded subsequent to this Declaration except the lien for real estate taxes and assessments and the lien of any first mortgage filed of record.

6.7.6 **Subordination and Mortgagee Protection**. Notwithstanding any of the provisions hereof to the contrary, the lien of any Assessment levied pursuant to this Declaration (and any late charges, interest, costs and attorney fees) shall be subordinate to, and shall in no way affect the rights of the holder of a first mortgage made in good faith for value received; provided, however, that such subordination shall apply only to Assessments, or installments thereof, which have become due and payable prior to the date of Sheriff's sale of such Lot pursuant to a foreclosure or the date of a deed in lieu of foreclosure. Such sale or transfer shall not relieve the mortgagee or the purchaser of a Lot at such sale from liability for any Assessments thereafter becoming due, or from the lien of any such subsequent Assessment.

ARTICLE VII

Upkeep of the Property

7.1_ **Lots.** Each and every Lot, its Dwelling Unit and any improvement erected thereon shall be maintained in a reasonable manner in accordance with the standard generally prevailing throughout the **Tall Oaks.**

7.2_ **Common Elements.** The Declarant shall maintain the Common Elements, specifically to include the maintenance and upkeep of the detention/retention basins, landscaping and entrance features, and any other Common Elements for six months after recording of this Declaration. For any Additional Property added to the terms and conditions of this Declaration, the Declarant shall maintain Common Elements identified on such Addition Property for six months after the recording of any amendment adding such Additional Property.

Thereafter, upon notice from the Declarant to the Association, the Association shall maintain the Common Elements, specifically to include the maintenance and upkeep of the detention basins, landscaped area and entrance features and any other Common Elements.

7.3_ **Drainage Easements**. Each Owner will be responsible for the maintenance, management and upkeep of all private drainage easement areas shown on the Survey Plat.

7.4_ **Association's Right to Maintain.** In the event that an Owner shall fail to provide maintenance as required by this Declaration in a manner satisfactory to the Association, and such Owner has failed to comply for ten (10) days after being so notified of such failure and upon being provided an opportunity to be heard concerning such failure, then the Association shall have the right, through its agents and employees, to enter upon said lot and repair, maintain and restore the Lot. In the event that such failure poses a health, safety or security risk, then no notice or hearing need be given. The cost of such maintenance and repair shall be assessed against the subject Lot in accordance with Article VI, Section 6.4. Nothing in this section shall be construed as giving the Association any right to repair, maintain or restore any Dwelling Unit.

7.5_ **Access to Lots**. For the purpose solely of performing the maintenance required or authorized herein, the Association, through its duly authorized agents or employees, or subcontractors, shall have the right, after reasonable notice to the Owner, to enter upon any Lot at reasonable hours on any day.

ARTICLE VIII

Restrictions

8.1_ Easements for installations and maintenance of utilities and drainage facilities will, where necessary, be reserved for such purpose in the conveyance of the individual lots.

8.2_ No noxious or offensive activity shall be carried on upon any lot, nor shall anything be done thereon which may be or may become an annoyance or nuisance to the neighborhood.

8.3_ No structure of a temporary character, trailer, basement, tent, shack, garage, barn or other outbuildings shall be used on any Lot at any time as a residence, either temporary or permanently. Construction or storage trailers or sheds are permitted while homes are under construction.

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shall require the approval of the Declarant and the **City of Monroe**. No underground or log homes will be permitted.

8.14_ One storage shed is permitted per lot provided the shed is no larger than 150 square feet and no taller than 12 feet. The shed must be made of wood, brick or similar material to the house, metal and plastic sheds are not permitted. The shed must have a shingled roof of similar color to the house and be painted/stained and landscaped to compliment the house. All sheds must be located in the rear of the lot and comply with the **City of Monroe** requirements but cannot be closer than 5 feet to a property line. All sheds require the Declarant's approval. Outbuildings or freestanding accessory structures such as pool houses; gazebos, playhouses, and swing sets are permitted subject to approval of the Declarant. Trampolines shall not be permitted. The design and detail of the outbuilding or freestanding accessory structures must be consistent and compliment the home with regard to materials and architecture.

8.15_ No above ground swimming pools will be permitted. When an in ground swimming pool is installed, a small storage shed with a maximum of 35 square feet will be permitted for the purpose of housing pool filter, pump, heater, equipment, and chemicals. The Declarant can approve a larger storage facility at his discretion if necessary to adequately house the pool equipment. It will be necessary to screen any structure if visible from adjoining homes within the subdivision.

8.16_ A one-story home shall have a minimum requirement of 1800 square feet and a two or more story home shall have a minimum requirement of 2100 square feet. Garages, porches and basements cannot be included in the determination of square footage. Square footage will be measured from outside of wall to outside of wall.

8.17_ All building materials shall conform to the **City of Monroe** material and architectural specifications.

8.18_ The main roof shall have a minimum pitch of 6 to 12 and all front facing gables shall have a minimum pitch of 8 to 12.

8.19_ The Declarant shall have the option at his sole discretion in the approval of all home plans. However, all plans at a minimum must comply with the home plans approved by the **City of Monroe** as part of the rezoning of the property. The Declarant can make any changes deemed necessary to the exterior home plans prior to approval of said plans as long as they are consistent with the City requirements.

8.20_ All homes shall use a mailbox and post as specified by Declarant.

8.21_ Christmas lights may be erected no sooner than four weeks prior to and removed no later than four weeks after Christmas.

8.22_ Air conditioning and heat pump equipment shall be located in the side or rear yard.

8.23_ There shall be no more than two garage or yard sale held on any lot during a one-year period.

8.24_ Flag poles are permitted in the front, side or rear yard for the purpose of flying the U.S and or the Ohio flags. Flag poles can be no larger than 25 feet in height and must be maintained in neat and orderly manner. The flags can be no larger than 4' x 6' feet in size and can be up-lit from the pole base. Flags can be attached to the house.

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insurance of the Common Elements, public liability and directors' and officers' insurance shall be Common Expenses of the Association. The policy may contain a reasonable deductible and the amount thereof shall be added to the face amount of the policy in determining whether the insurance equals the full replacement cost.

Cost of insurance coverage obtained for the Common Elements, public liability, and directors' and officers' shall be included in the General Assessment, as defined in Article VI, Section 6.3.

All such insurance coverage obtained by the Board shall be written in the name of the Association, as Trustee, for the respective benefited parties, as further identified below. The provisions hereinafter set forth shall govern such insurance:

10.1.1 All policies on the Common Elements shall be for the benefit of the Lot Owners and their mortgages as their interests may appear.

10.1.2 Exclusive authority to adjust losses under policies in force on the Property obtained by the Association shall be vested in the Board; provided, however, that no mortgagee having an interest in such losses may be prohibited from participating in the settlement negotiations, if any, related thereto.

10.1.3 In no event shall the insurance coverage obtained by the Board hereunder be brought into contribution with insurance purchased by individual Owners, Occupants, or their mortgagee, and the insurance carried by the Association shall be primary.

10.1.4 All casualty insurance policies shall have an agreed amount endorsement with an annual review by one or more qualified persons, as least one of whom must be in the real estate industry and familiar with construction in the **Butler County**, Ohio, area.

10.1.5 The Board shall be required to make every reasonable effort to secure insurance policies that will provide for the following:

10.1.5.1 a waiver of subrogation by the insurer as to any claims against the Board, its manager (if any), the Owners and their respective tenants, servants, agents, and guests;

10.1.5.2 a waiver by the insurer of its rights to repair and reconstruct instead of paying cash;

10.1.5.3 that no policy may be canceled, invalidated, or suspended on account of the acts of any one or more individual Owners;

10.1.5.4 that no policy may be canceled, invalidated, or suspended on account of the conduct of any trustee, officer, or employee of the Association or its duly authorized manager without prior demand in writing delivered to the Association to cure the defect and the allowance of a reasonable time thereafter within which the defect may be cured by the Association, its manager, any Owner or mortgagee; and;

10.1.5.5 that any "other insurance" clause in any policy exclude individual Owner's policies from consideration.

10.2_ Disbursement of Proceeds. Proceeds of insurance policies shall be disbursed as follows:

insurance of the Common Elements, public liability and directors' and officers' insurance shall be Common Expenses of the Association. The policy may contain a reasonable deductible and the amount thereof shall be added to the face amount of the policy in determining whether the insurance equals the full replacement cost.

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10.1.5.3 that no policy may be canceled, invalidated, or suspended on account of the acts of any one or more individual Owners;

10.1.5.4 that no policy may be canceled, invalidated, or suspended on account of the conduct of any trustee, officer, or employee of the Association or its duly authorized manager without prior demand in writing delivered to the Association to cure the defect and the allowance of a reasonable time thereafter within which the defect may be cured by the Association, its manager, any Owner or mortgagee; and;

10.1.5.5 that any "other insurance" clause in any policy exclude individual Owner's policies from consideration.

10.2_ Disbursement of Proceeds. Proceeds of insurance policies shall be disbursed as follows:

subject to the taking, if any) by any authority having the power of condemnation or eminent domain, each Owner shall be entitled to notice thereof and to participate in the proceedings incident thereto, unless otherwise prohibited by law. The award made for such taking shall be payable to the Association, as trustee for all Owners, to be disbursed as follows:

If the taking involves a portion of the Common Elements on which improvements have been constructed, then, unless within sixty (60) days after such taking the Declarant and at least seventy-five (75%) percent of the Members of the Association shall otherwise agree, the Association shall restore or replace such improvements so taken on the remaining land included in the Common Elements, to be extent lands are available therefore, in accordance with plans approved by the Board. If such improvements are to be repaired or restored, the above damage or destruction, which is to be repaired, shall apply. If the taking does not involve any or if there are net funds remaining after such restoration or replacement is completed, then such award or net funds shall be disbursed to the Association and used for such purposes as the Board shall determine.

ARTICLE XII

Development Rights

12.1_ **Submission of Additional Land.** The Declarant reserves the unilateral right to submit all or any portion of the Additional Land to the terms of this Declaration at any time without the consent of the Association. The submission shall be accomplished by the filing of a Supplemental Declaration identifying the Additional Land, the Lots and the Common Elements.

12.2_ **Notice to the Board.** The Declarant shall promptly notify the Board of the filing of any Supplemental Declaration.

12.3_ **Easements Reserved.** The Declarant reserves for itself, its successors and assigns and any Builder, the following easements:

12.3.1 Easements for drainage and all utilities as shown on the Record Plat.

12.3.2 Easements for ingress, egress, drainage and all utilities over the Common Elements provided that such easements do not unreasonably interfere with any Owner's rights of enjoyment.

12.3.3 An easement over the Common Elements as may be reasonably necessary for the purpose of discharging its obligations or exercising any rights under the Declaration.

12.3.4 An easement for ingress, egress, drainage and all utilities over the Common Elements and all Lots in favor of the Additional Property and the right to convey that easement to others in the event that the Additional Property is not submitted to this Declaration.

12.4_ **Assignment of Development Rights.** The Declarant reserves the right to assign any or all of its Development Rights to any person or entity for the purpose of further development and improvements of the Property. No assignment shall be effective unless it is in writing and filed with the Recorder of Butler County, Ohio.

ARTICLE XIII

Special Declarant Rights

13.1_ **Use for Sale Purposes**. Declarant reserves for itself, its successors and assigns, and any Builder the right to maintain sales offices and models on the Lots.

13.2_ **Signs and Marketing**. The Declarant reserves the right for itself and any Builder to post signs and displays in the Property to promote sales of Lots, and to conduct general sales activities, in a manner as will not unreasonably disturb the rights of Owners.

13.3_ **Control of the Association**.

13.3.1 **Appointment of Directors and Officers.** The Declarant reserves the right to appoint and remove the members of the Board and the Officers of the Association until such time as 95% of the Lots located on the Property or any Additional Property have been sold.

13.3.2 **Early Termination of Control.** The Declarant may voluntarily surrender the right to appoint and remove directors and officers before the termination of the period set forth above. In that event, the Declarant may require, for the duration of that period, that specified actions of the Association or the Board, be approved by Declarant before they become effective. Such voluntary termination shall be evidenced by a recorded instrument executed by the Declarant setting forth the termination of right to appoint and the actions which require Declarant's approval.

13.4_ **Declarant's Personal Property**. The Declarant and any Builder reserve the right to retain all personal property and equipment used in sales, management, construction and maintenance of the premises that has not been represented as property of the Association. The Declarant and Builder reserve the right to remove, within One (1) year after the sale of the last Lot, from the Property any and all goods and improvements used in development, marketing and construction, whether or not they have become fixtures.

13.5_ **Right to Amend Documents**. Notwithstanding anything above to the contrary, this Declaration may be amended at any time without the vote of Owners by a written instrument executed by the Declarant for the purpose of eliminating or correcting any typographical or other inadvertent error herein; eliminating or resolving any ambiguity herein; making nominal changes; clarifying Declarant's original intent; making any change necessary or desirable to meet the requirements of any institutional lender, the Veteran's Administration, the Federal Housing Administration, the Federal National Mortgage Association, the Federal Home Loan Mortgage Corporation, or any other agency which may insure or purchase loans on a Lot. No such amendment, however, shall materially affect any Owner's interest in the Association or the Common Elements. Each Owner and his mortgagee, by acceptance of a deed to a Lot or a mortgage encumbering such Lot, shall be deemed to have consented to and approved of the provisions of this paragraph and the amendment of this Declaration by Declarant as provided in the immediately preceding sentence. All such Owners and their mortgagee, upon request of Declarant, shall execute and deliver from time to time all such instruments and perform all such acts as may be deemed by Declarant to be necessary or proper to effectuate the provisions of this paragraph.

ARTICLE XIV

Duration, Amendment and Termination

14.1_ **Duration.** This Declaration, and its provisions, shall be covenants running with the land and shall bind the property and shall (regardless of whether any such beneficiary owns an interest in any Lot) inure to the benefit of and be enforceable by Declarant, the Association, and each Owner, Occupant and their legal representatives, heirs, devisees, successors and assigns and shall continue in full force and effect for twenty (20) years from the date on which this Declaration is recorded. Thereafter this Declaration shall be automatically renewed for successive ten-year periods unless amended or terminated as provided in this Article.

14.2_ **Amendment.** During the period in which the Declarant owns any portion of the Property, any provision of this Declaration may be amended in whole or in part by a recorded instrument executed by Declarant and approved by the Owners of at least 67% percent of all Lots. For the purpose of making an amendment to this document each lot owned by the Declarant shall count as ten (10) lots.

After the Declarant has sold and conveyed all portions of the Property, any provision of this Declaration may be amended in whole or in part by a recorded instrument approved by the Owners of at least sixty-seven (67%) of all Lots.

All Amendments shall be executed by the Declarant, if required, and shall be executed by the President and Secretary of the Association. Such Amendment shall certify that the proper notices were sent and that the requisite vote was obtained. Amendments need not be signed by the Owners. All Amendments must be recorded with the **Butler County** Recorder in order to be effective.

14.3_ **Termination.** This Declaration and the regime created thereby may be terminated only in accordance with this Section.

14.3.1 **Consent Required**. This Declaration may be terminated only upon consent of Eighty (80%) Percent of the Owners after the Turnover Date as identified in Section 1.19.

14.3.2 **Agreement to Terminate**. No termination shall be effective unless an agreement to terminate is filed for record with the **Butler County** Recorder. The requisite number of Owners shall execute this agreement in the same manner as a deed. The agreement shall provide for disposition of the Common Elements, disposition of Association funds and other resolutions and provisions necessary to terminate the regime and wind up the affairs of the Association.

ARTICLE XV

Miscellaneous

15.1_ **No Reverter**. No covenant, condition, restriction or reservation of easement contained in this Declaration is intended to create, or shall be construed as creating, a condition subsequent or a possibility of reverter.

15.2_ **Notices**. Any notice required or permitted to be given to an Owner or resident by the Board pursuant to the provisions of this Declaration shall be deemed given when mailed by United States mail, postage prepaid, addressed to such person's last address as it appears on the records of the Association.

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Duration, Amendment and Termination

14.1_ **Duration.** This Declaration, and its provisions, shall be covenants running with the land and shall bind the property and shall (regardless of whether any such beneficiary owns an interest in any Lot) inure to the benefit of and be enforceable by Declarant, the Association, and each Owner, Occupant and their legal representatives, heirs, devisees, successors and assigns and shall continue in full force and effect for twenty (20) years from the date on which this Declaration is recorded. Thereafter this Declaration shall be automatically renewed for successive ten-year periods unless amended or terminated as provided in this Article.

14.2_ **Amendment.** During the period in which the Declarant owns any portion of the Property, any provision of this Declaration may be amended in whole or in part by a recorded instrument executed by Declarant and approved by the Owners of at least 67% percent of all Lots. For the purpose of making an amendment to this document each lot owned by the Declarant shall count as ten (10) lots.

After the Declarant has sold and conveyed all portions of the Property, any provision of this Declaration may be amended in whole or in part by a recorded instrument approved by the Owners of at least sixty-seven (67%) of all Lots.

All Amendments shall be executed by the Declarant, if required, and shall be executed by the President and Secretary of the Association. Such Amendment shall certify that the proper notices were sent and that the requisite vote was obtained. Amendments need not be signed by the Owners. All Amendments must be recorded with the **Butler County** Recorder in order to be effective.

14.3_ **Termination.** This Declaration and the regime created thereby may be terminated only in accordance with this Section.

14.3.1 **Consent Required**. This Declaration may be terminated only upon consent of Eighty (80%) Percent of the Owners after the Turnover Date as identified in Section 1.19.

14.3.2 **Agreement to Terminate**. No termination shall be effective unless an agreement to terminate is filed for record with the **Butler County** Recorder. The requisite number of Owners shall execute this agreement in the same manner as a deed. The agreement shall provide for disposition of the Common Elements, disposition of Association funds and other resolutions and provisions necessary to terminate the regime and wind up the affairs of the Association.

ARTICLE XV

Miscellaneous

15.1_ **No Reverter**. No covenant, condition, restriction or reservation of easement contained in this Declaration is intended to create, or shall be construed as creating, a condition subsequent or a possibility of reverter.

15.2_ **Notices**. Any notice required or permitted to be given to an Owner or resident by the Board pursuant to the provisions of this Declaration shall be deemed given when mailed by United States mail, postage prepaid, addressed to such person's last address as it appears on the records of the Association.

David Welsh, President of Welsh Development Company, Inc., does hereby establish these conditions and restrictions for the property heretofore described, and has hereunto set his hand this 14 day of April, 2006.

Welsh Development Company, Inc.
An Ohio Corporation

BK: 7728 PG: 635

David Welsh, President

STATE OF OHIO

HAMILTON COUNTY

The foregoing instrument was signed and acknowledged before me this 14 day of April, 2006 by David Welsh, President of Welsh Development Company, Inc.

Notary Public, State of Ohio

NOTARIAL SEAL STATE OF OHIO

JEFF HAYES
Notary Public, State of Ohio
My Commission Expires 01-25-2011

This instrument was prepared by:
Welsh Development Company, Inc

EXHIBIT A

Situated in Section 36, Town 3, Range 3, Being Part of Lots 3513 and 3514 City of Monroe, Butler County, Ohio and known as Lots 5455 through 5469, inclusive of Tall Oaks, Phase 1, recorded at Plat Envelop 3954, pages A – D of the Butler County Ohio Records.

EXHIBIT C

TALL OAKS HOMEOWNERS ASSOCIATION
ARCHITECTURAL IMPROVEMENT APPLICATION

Pursuant to Article IX, Section 9.2 of the Declaration, "No improvement shall be placed, erected or installed on the Property, no construction (which term shall include in its definition staking, clearing, excavation, grading and other site work) shall be permitted without, until and unless the Owner first obtains the written approval thereof by the Declarant and otherwise complies with the provisions of this Declaration. The terms and conditions of this provision apply to all improvements (after the initial construction) of the Dwelling Unit upon the Lot and any alterations, improvements or additions made to the Dwelling Unit or otherwise upon the Lot during the period that the Declarant is the Owner of any Lots within the subdivision."

This form may be used to seek approval from Welsh Development Company for all new construction and any improvements to the exterior of the property during the term that Welsh Development Company owns any Lots within the subdivision. Please submit this application to the address below:

Welsh Development Company, 9336 Dick Road, Harrison, Ohio 45030

OWNER:_____ HOME PHONE_____

ADDRESS:_____ WORK PHONE_____

Description of Improvement or change:_____

_____

Attach plans, drawings, and/or materials list in order to clearly describe the improvement.

The undersigned hereby submits this Application to Welsh Development Company and agrees to complete the improvements precisely as described.

Date:_____ Signature:_____

ACTION BY WELSH DEVELOPMENT COMPANY

This Application was reviewed by Welsh Development Company on the _____ day of _____, _____. This Application is:

Approved_____ Not Approved_____ _____

Welsh Development Company

A copy of this Application and decision was mailed to the Lot Owner on the _____ day of _____, _____.